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ABSTRACT

This presentation describes the development of an Icelandic school for students in grades 1-10. The school is based on the needs of students, their families, their communities, and their country. The process for making decisions about the new schools is called "design down," which refers to starting with the biggest issues and moving toward smaller goals. The physical space is intended to support all elements of school organization. Decisions are made collaboratively by school and community stakeholders. The school planning process involves linking mission, vision, values, and logo into a highly meaningful signature for the school. The planning team considers four concepts high priority: community, nature, spirit/well-being, and flow. Learning expectations include working cooperatively, understanding diversity, seeking knowledge, communicating effectively, expecting success from all students, and experiencing success on national and local exams. The learning process includes aligning with the learning context, audience, signature, and expectations; integrating learners of different ages; using technology; building student self-esteem; engaging learners in inquiry; and motivating students. Other parts of the process include the school site, landscape, historic precedents, the design concept (which integrates the patterns of the landscape and the school), and freedom and creativity. (SM)

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Freedom and Creativity

A story of Learning, Democracy, and the Design of Schools

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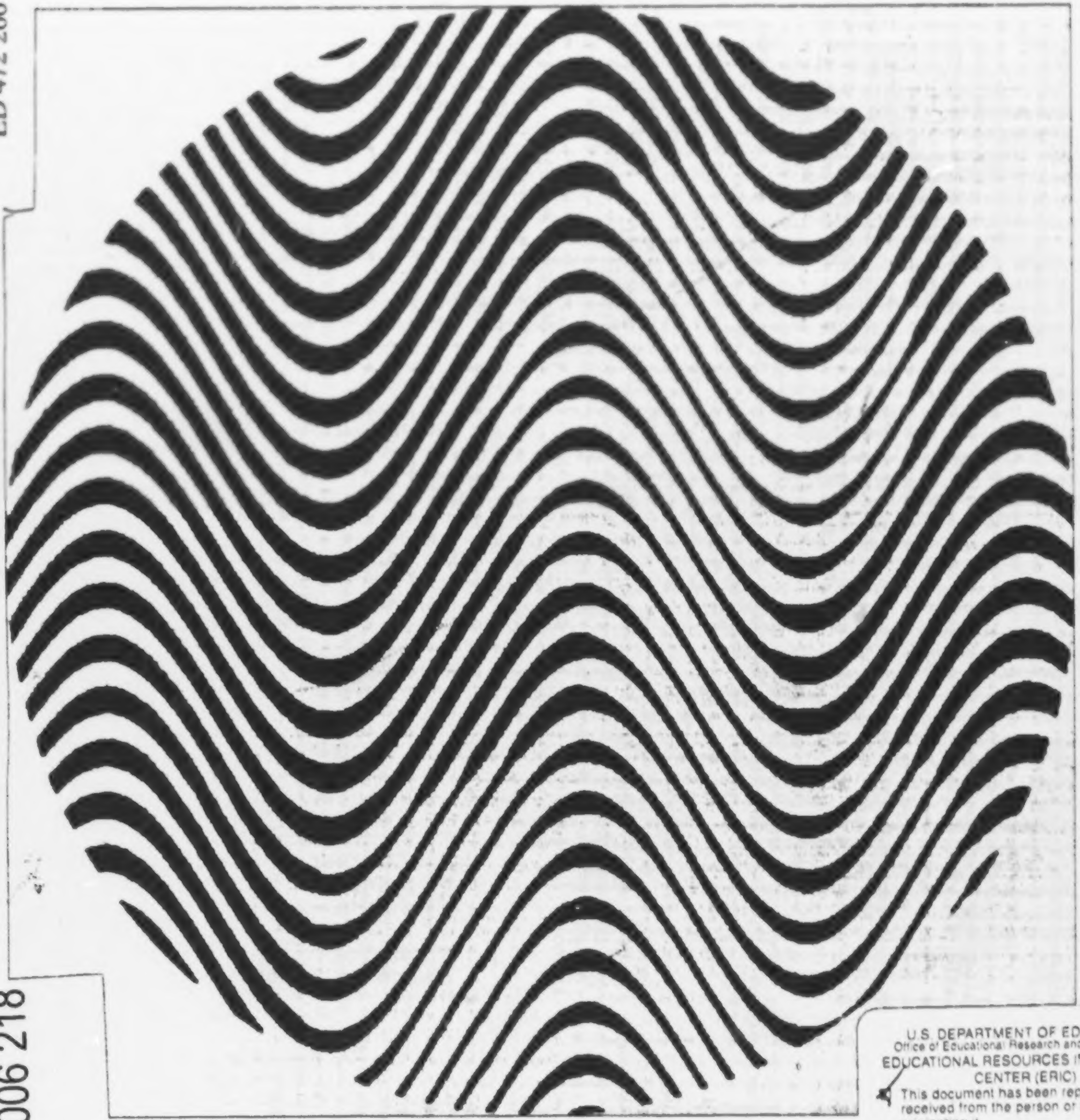

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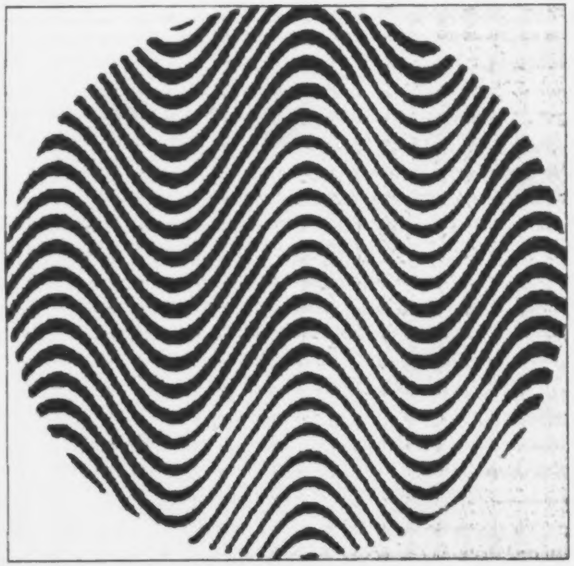
Envision

Envision a place which enriches a child's creativity.

Envision a place which enables a child's freedom.

Envision a place where children learn that is democratic.

The story that follows is about such a place. It is also about how it was determined that such a place is to be.



Contents

The Story is organized as follows:

1. Background
2. Design Down Process
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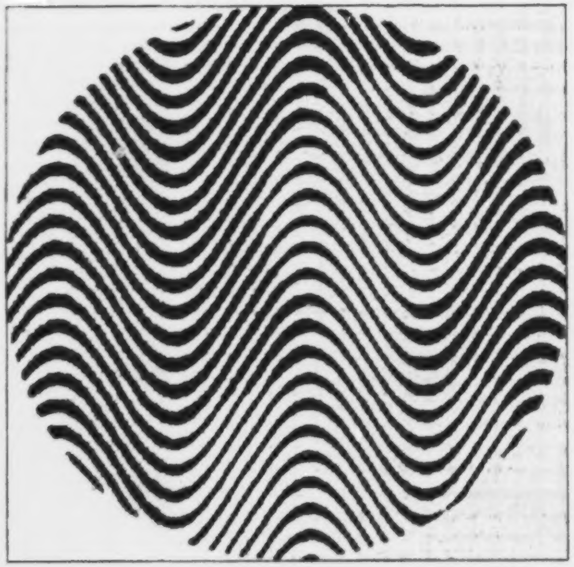
    - Signature
    - Expectations
    - Process
    - Environment
3. Site
4. Landscape
5. Historic Precedents
6. Design Concept
7. Freedom and Creativity
8. Summary



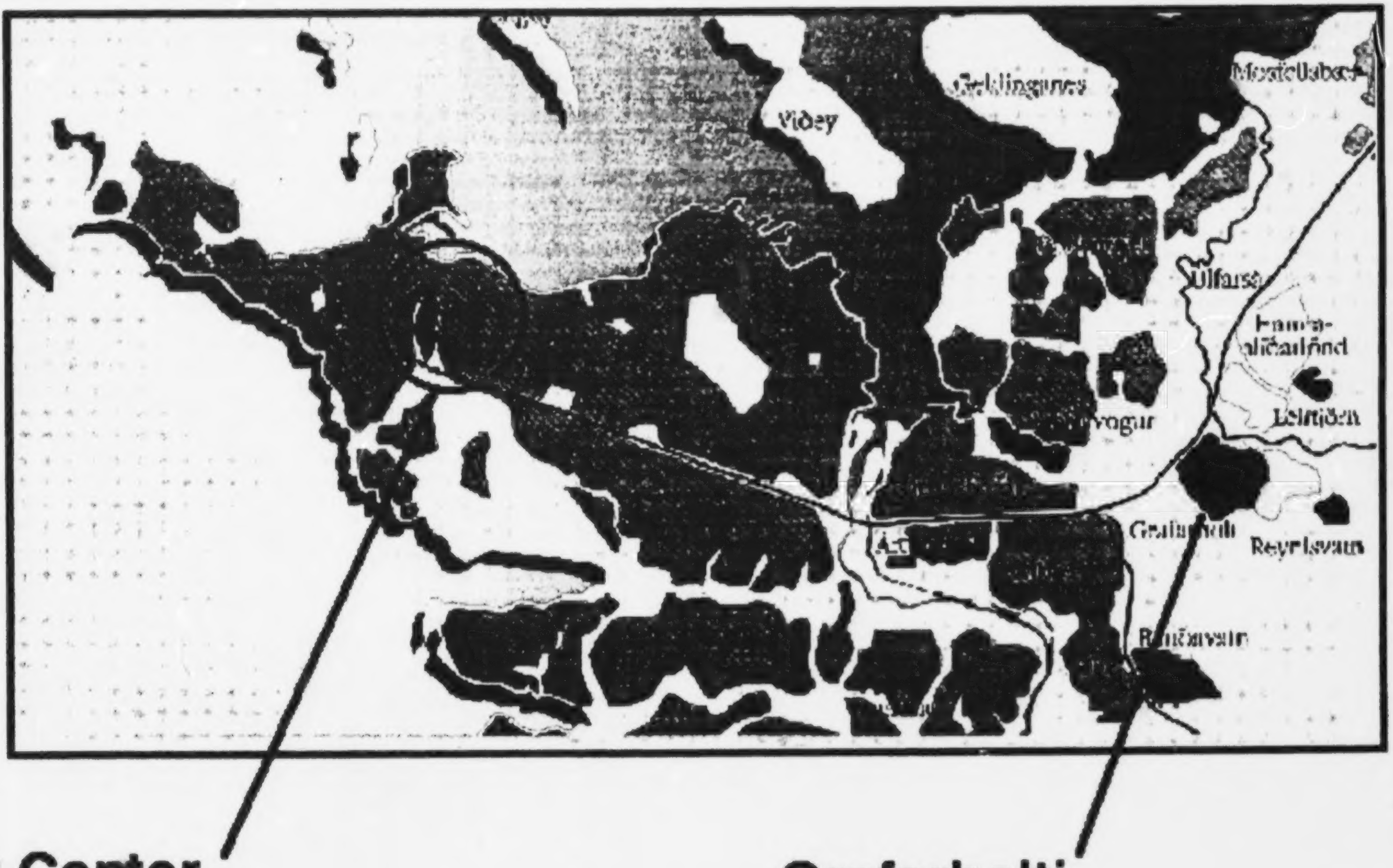
1. Background

The name of this place is the "Nyr Grunnskoli i Grafarholti" which is Icelandic for a new basic school at Grafarholti (a new neighborhood on the edge of Reykjavik). The school is for 400 students grades 1 through 10, the standard basic school configuration in Iceland.

It is the intention that this be a place for learning that is based on the needs of children, their families, their communities and their country. It is not based on patterns from the past. The design developed here shall inform learning for both existing and future schools in Reykjavik and Iceland.

Reykjavik

Location

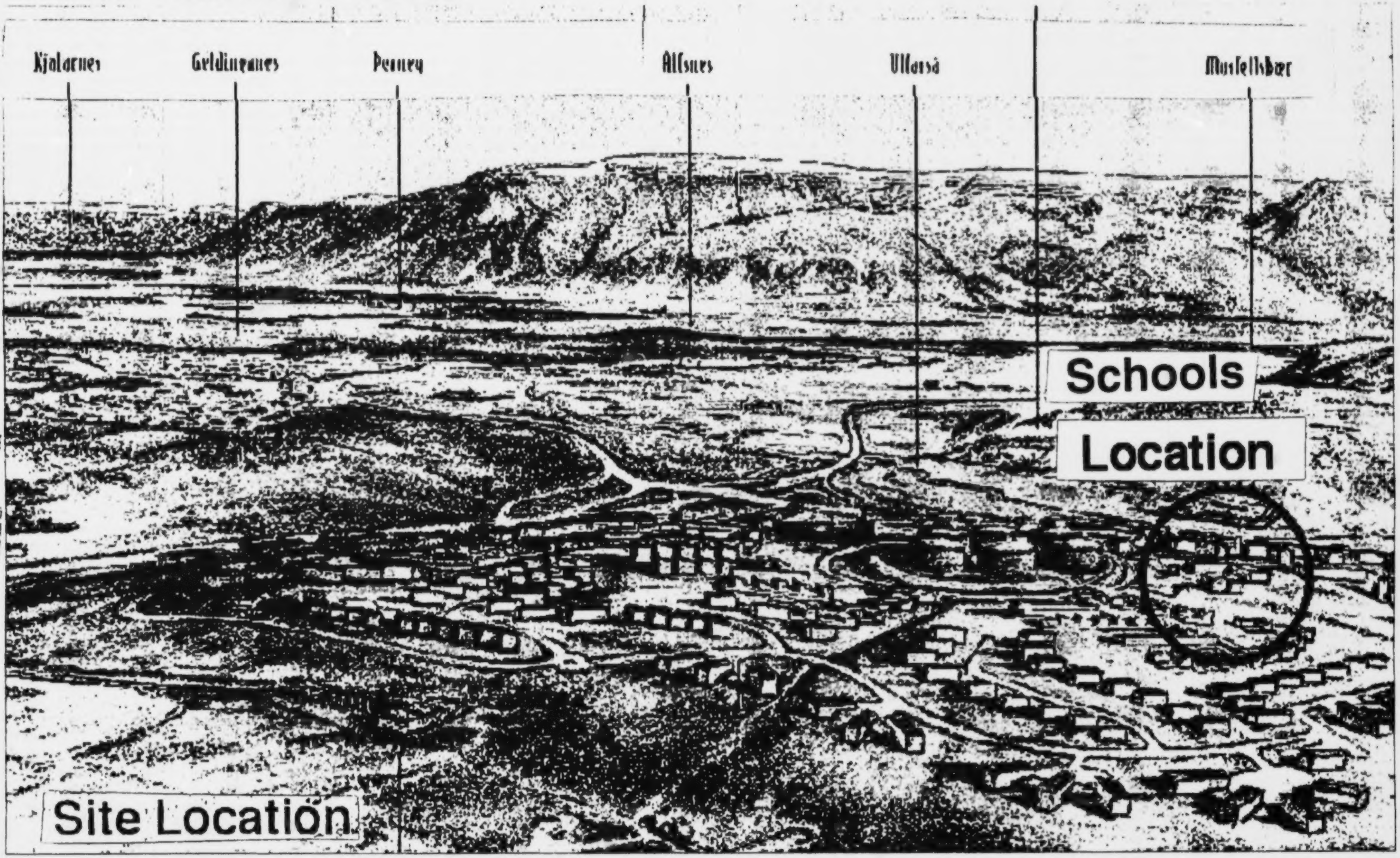


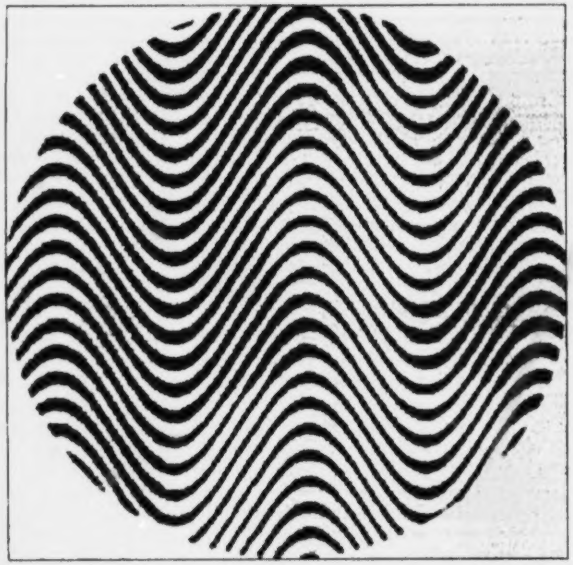
City Center

Grafarholti

Grafarholti

A new neighborhood





2. Design Down Process

The process for making decisions about this new school is called "Design Down." First, the idea is to start with the biggest issues and move toward more detailed aspects. Second, the goal is to make all the parts fit together, like a puzzle.

Therefore, the physical space will support all elements of how the school is organized (students, time, curriculum, staff, etc.). This will fit with the learning process. The learning process is established to fulfill the learning expectations (those things the community, parents, and students expect from their school). These expectations are consistent with what is special about the school and the larger community issues.

Designing Down

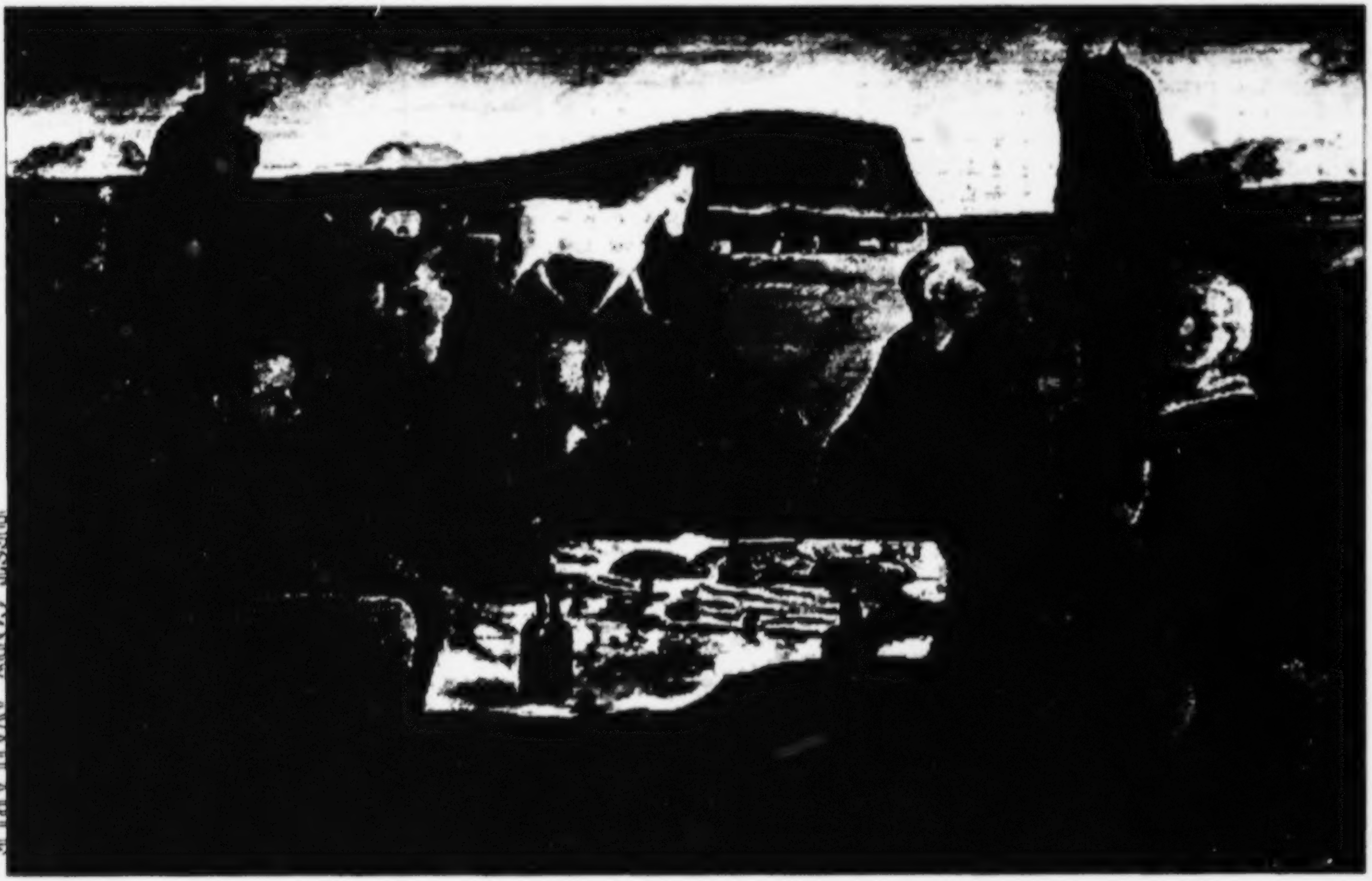
The decisions are made by a multi-stakeholder group of parents, teachers, administrators, students, employers, neighbors, and other concerned citizens.

Learning

- Context
- Audience
- Signature
- Expectations
- Process
- Organization
- Partnerships
- Staff
- Environment
- Celebration
- Finance

Culture

The process starts with looking at the major cultural issues (the communities challenges, opportunities, aspirations and assets).



An Icelandic
painting
depicting one
perspective of
Icelandic
culture.

Signature

The learning signature focuses on what is to be special and unique. It becomes the identity of the school.

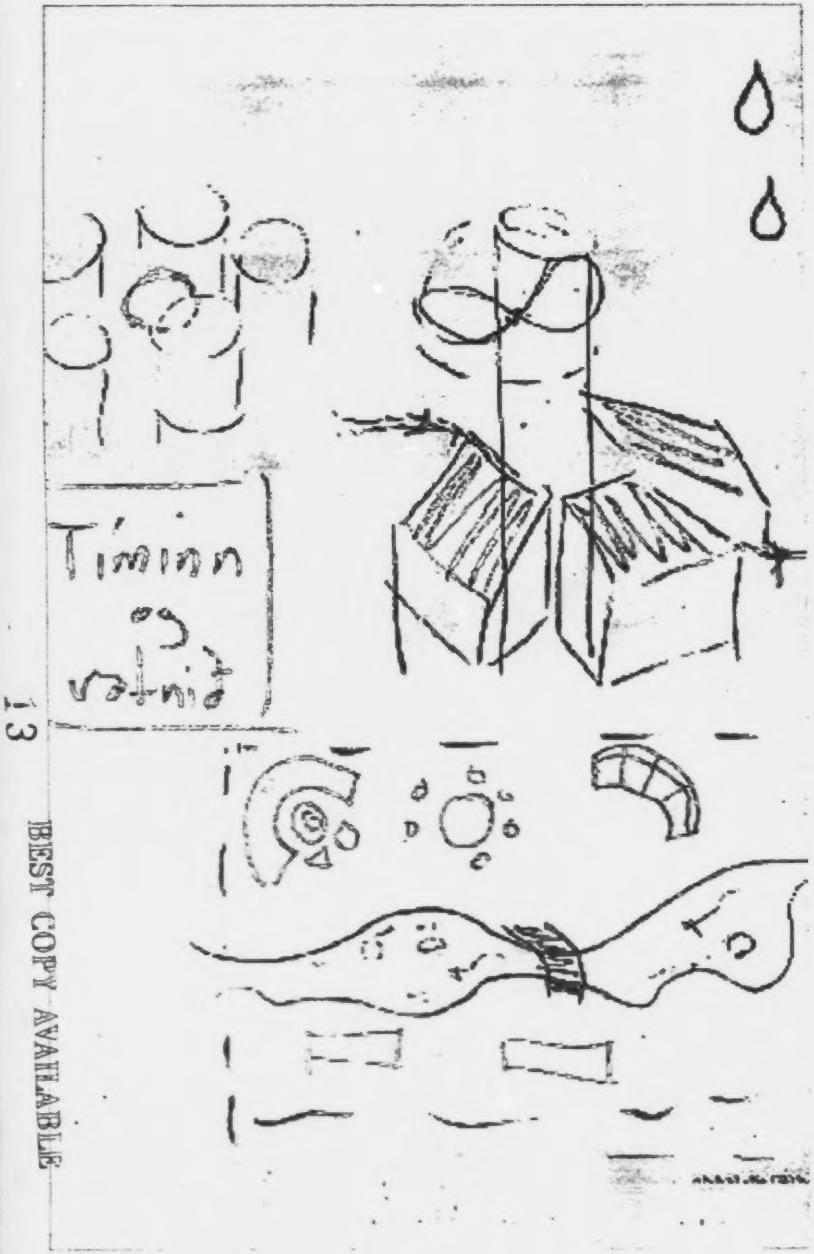
Learning

Context
Audience
Signature
Expectations
Process
Organization
Partnerships
Staff
Environment
Celebration
Finance

Signature

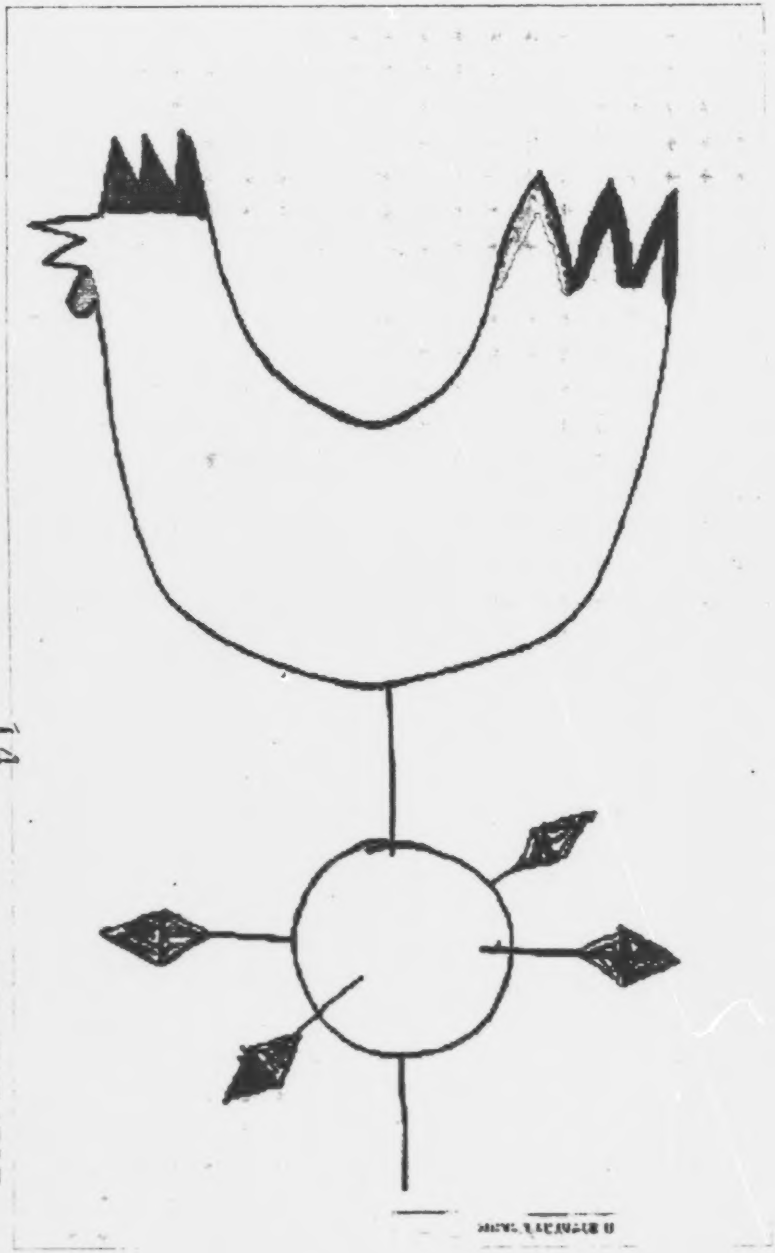
While most school-planning processes include consideration of mission, vision, values, and logo, these components are rarely linked together in a compelling and highly meaningful signature for the school. Giving a school a special focus provides coherence, consistency, and spirit to the school, and thereby adds to the quality of the learning experience and accomplishments.

The following images and text were created by the Design Down Committee. The highlighted text represents the priority signature concepts.



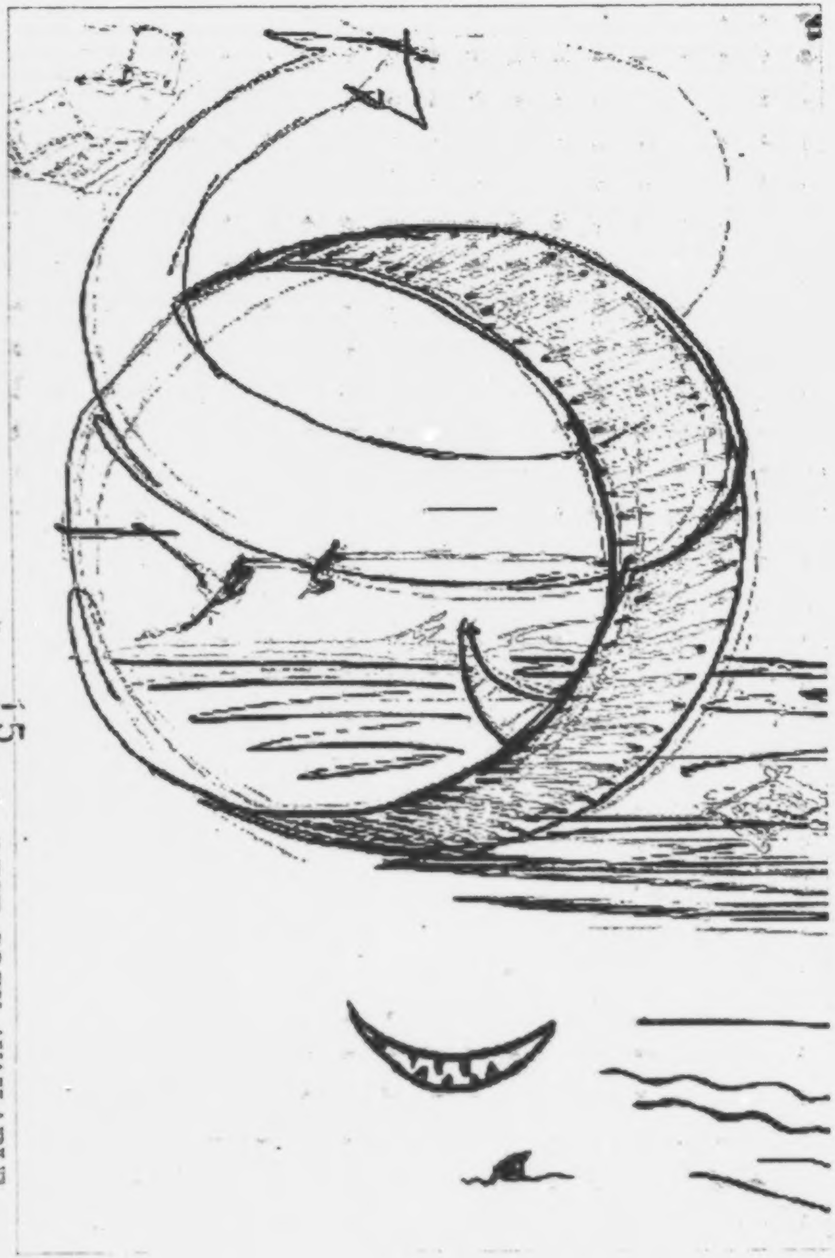
Signature - Team 1

1. Nature – very important to Icelanders, very related to nature, unspoiled ruggedness shapes it's people.
2. Water – lake, river, ocean (Flow)
3. Cracks – earthquake
4. Resources – wind & geothermal
5. Tanks – stores (supplies) hot water & is an important, prominent architectural element
6. Tower – view, sky
7. Community – togetherness of community – Reykjavik is now taking on 'urban' characteristics – return to the feel of small villages



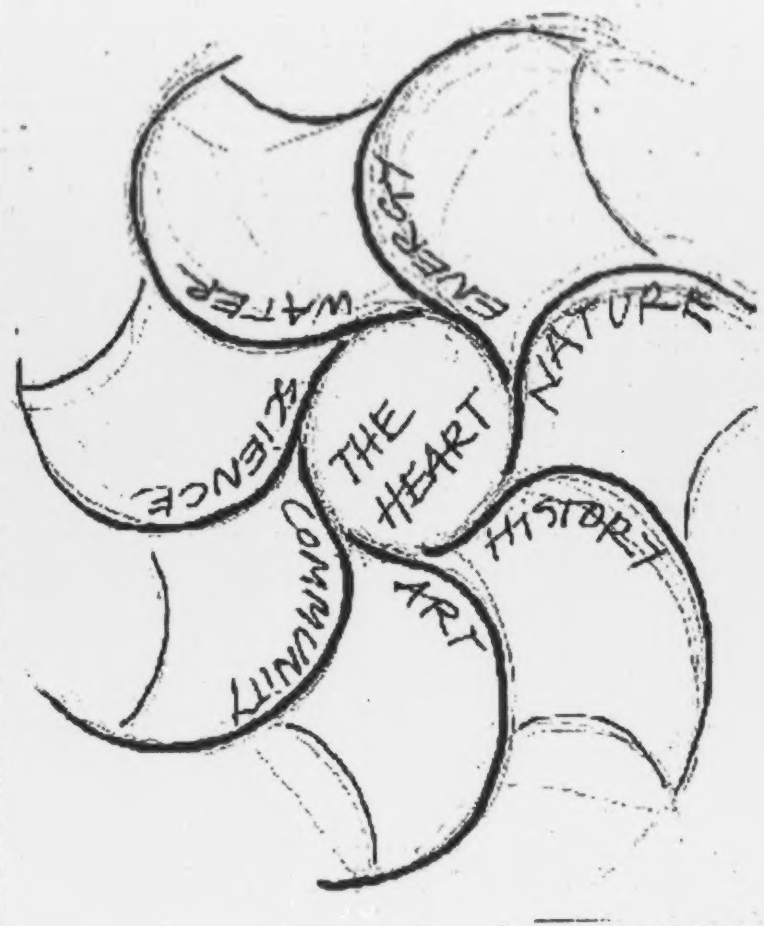
Signature - Team 2

1. Hill – prominent location
2. View
3. Water (Flow
4. Environment – landscape similar to Nature
5. Weather – wind – will experience weather in this location
6. 'Architecture' – not just a building
7. Past – relating to future (Flow)
8. Community – enlighten people (old parliament)
9. Workplace / home relationship
10. Well being (Spirit) – quality of (life) environment – spiritual aspect – 'good feeling' upon entering – everyone can accomplish and feel good about themselves



Signature - Team 3

1. 3rd year of millennium – tension, melting pot, past meets future (Flow)– focus on FORUM
2. Source of (heated) water (in tank) is in location of oldest forum
3. History (Flow)
4. Animals – annex a farm (partnership)
5. Fish/farm/aquarium – water is a connecting element (Flow)
6. Virtual reality farm etc.
7. Integration



(Flow)

Signature - Team 4

1. Exchange program with other new schools in the Grafarholt area
2. One school could be a Science center (related to the tanks for example).
3. One school could be related to the environment – the lake, forest, nature
4. The tanks are strong forms – utilize - for example the artist competition for an artistic design for the area between the tanks. (one design was of the universe within that space – Egyptian mythology
5. Make architectural statement – 'like at Blue Lagoon'

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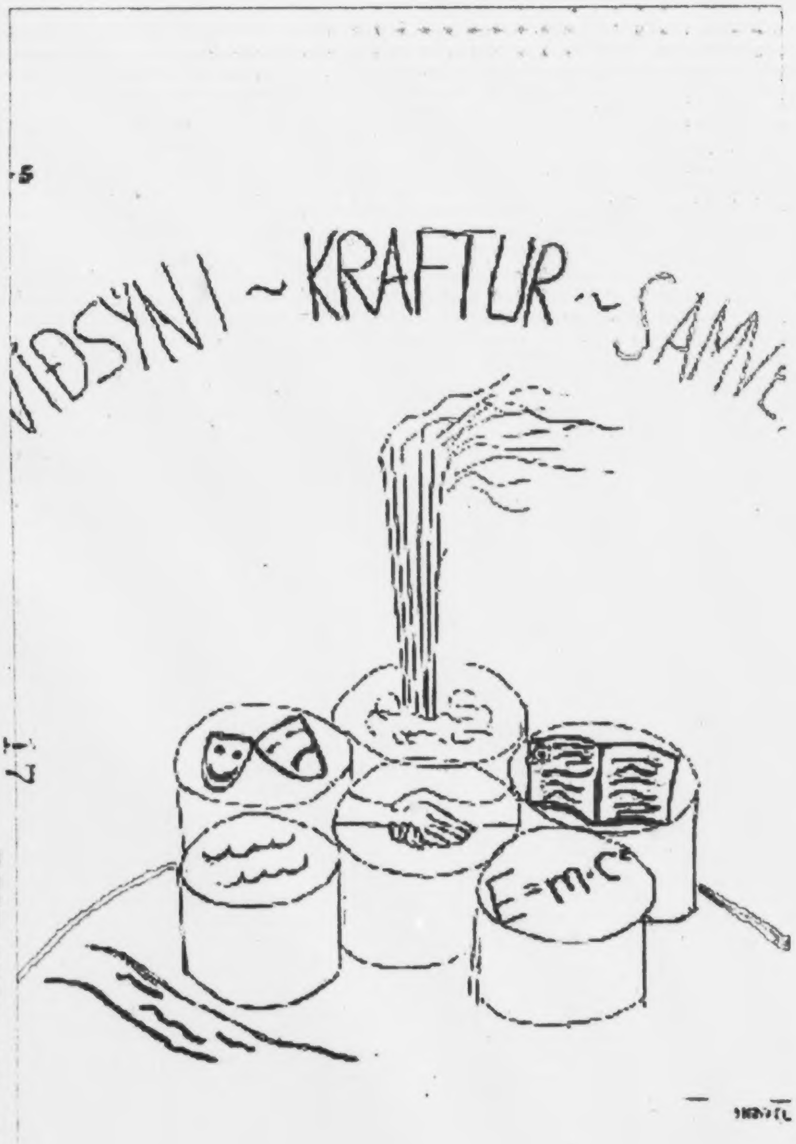
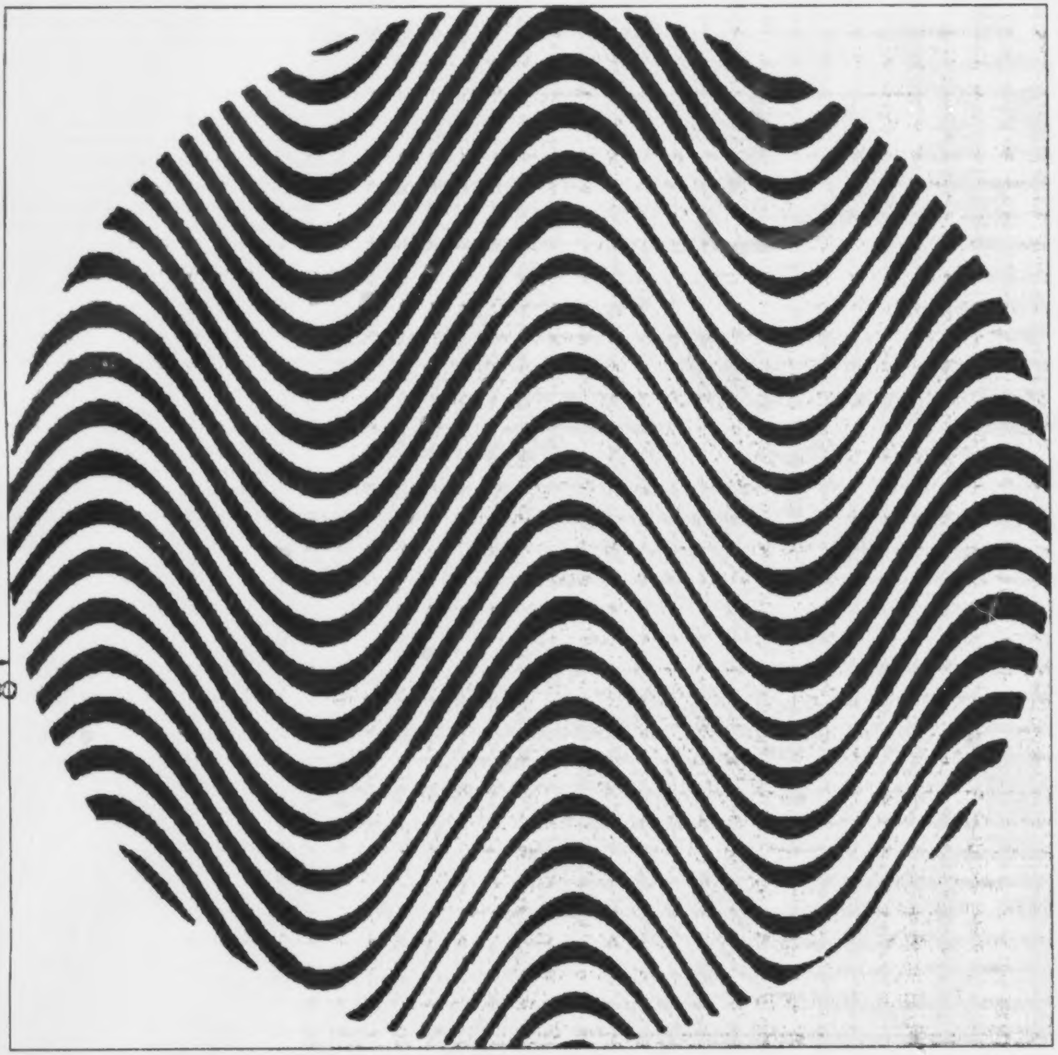


Signature - Team 5

1. Circles – globe, tanks
2. Water – hot – energy, saga, cold-river (like learning – comes/goes)
3. Grass roof – connection to river
4. Hill – view of the world – internet
5. Heart – tanks
6. Spirit – warm heart
7. Passion – learning, running water (Flow)
8. Purpose – high self esteem
9. Energy – open to nature
10. Commitment – responsibility, environmental awareness – invite power company to partner



Signature Design

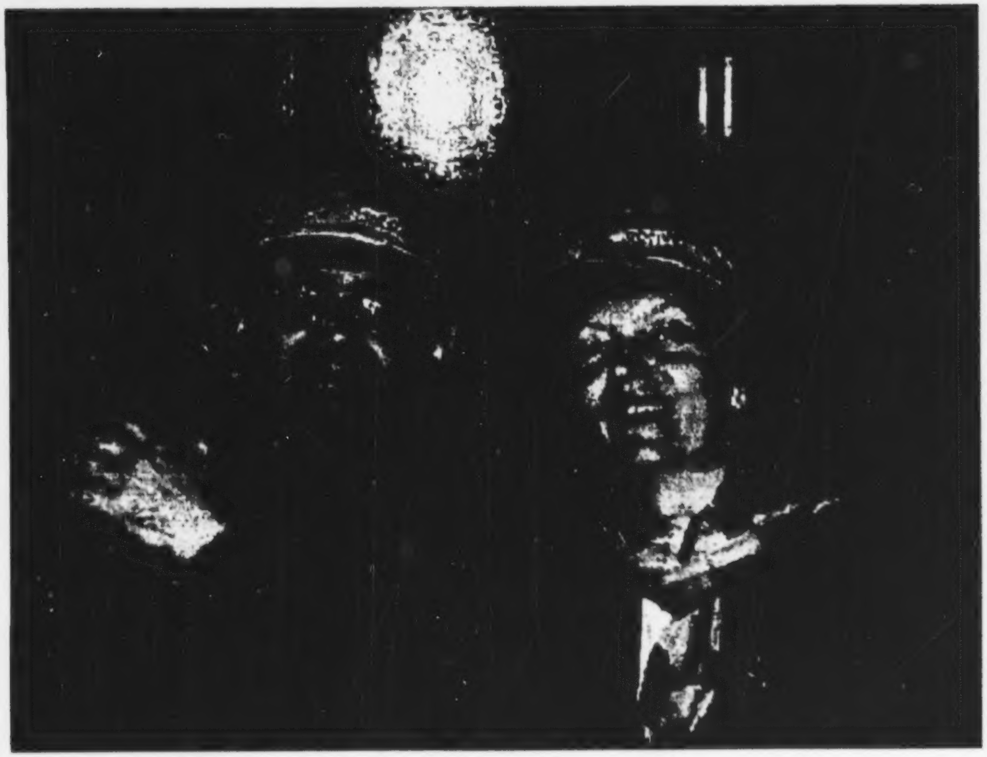
Four concepts were seen as highest priority by the committee.

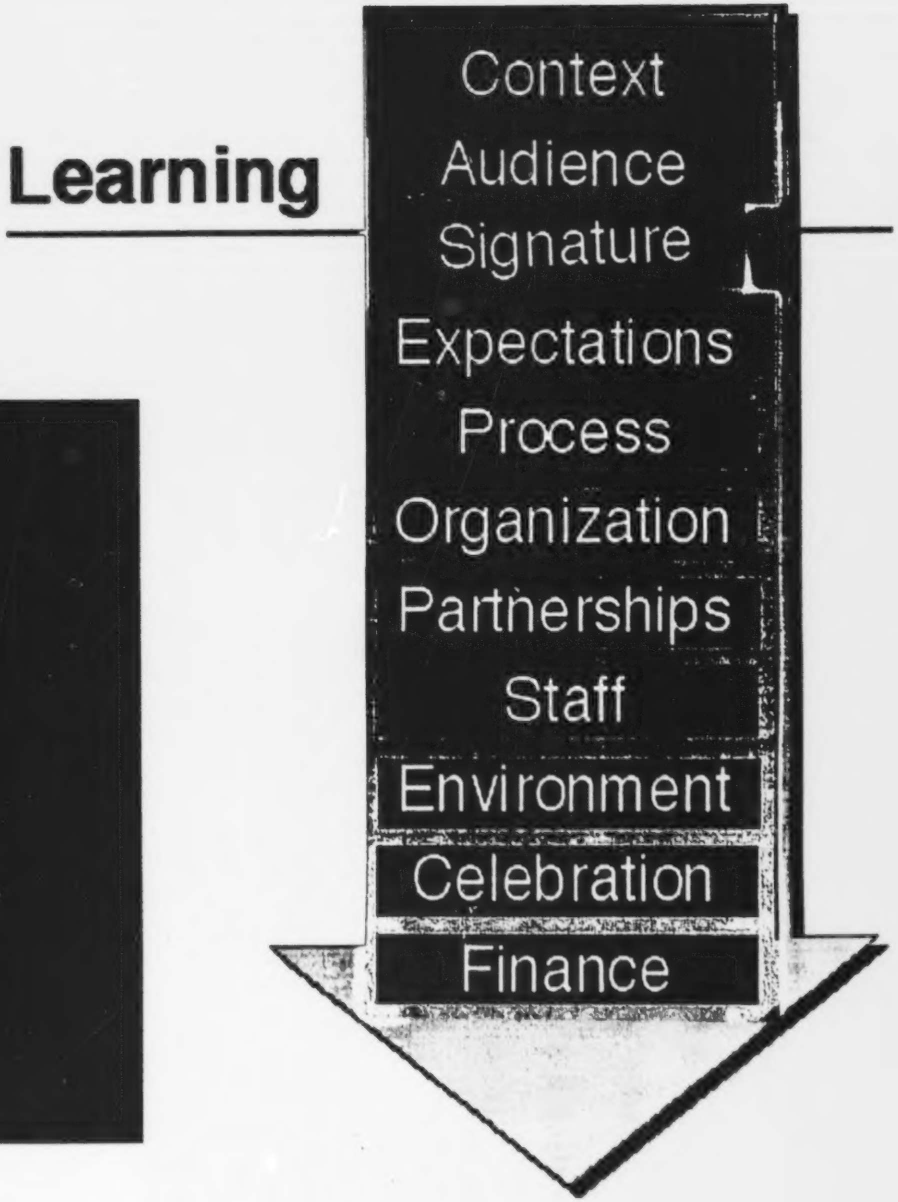
Priority = Element

Community = Circle
Nature = Green
Spirit = Image
Flow = Waves

Expectations

Learning expectations address what is promised in terms of learning results or outcomes.





Learning

Context
Audience
Signature
Expectations
Process
Organization
Partnerships
Staff
Environment
Celebration
Finance

Learning Expectations

Learning expectations represents the students' accomplishments as promised by the school in exchange for the public's investment in teaching and learning-often on the order of $70,000 to $100,000 per student and about 2,400 days of learning for a typical high school graduate in the USA. Learning expectations include statements such as "self-directed learner," "collaborative producer:' and "critical thinker."

The following 2 slides are the learning expectations for the "Nyr Grunnskoli i Grafarholti"

Learning Expectations 1:

1. The ability to work cooperatively in groups and responsibly as an individual, developing a competency with computers and other advanced communication tools.
2. An understanding of multi-cultural issues and an appreciation of the value of diversity, tolerance and respect for different family models, religions and values.
3. The ability to seek knowledge; learning the basic skills needed to access and evaluate information.
4. Develop effective communication skills using written, oral and visual forms of self-expression.

Learning Expectations 2:

5. Build strong self-image through competency in goal setting and time management. Learn to be flexible, curious and creative students. Be strong, responsible individuals, with self-discipline.

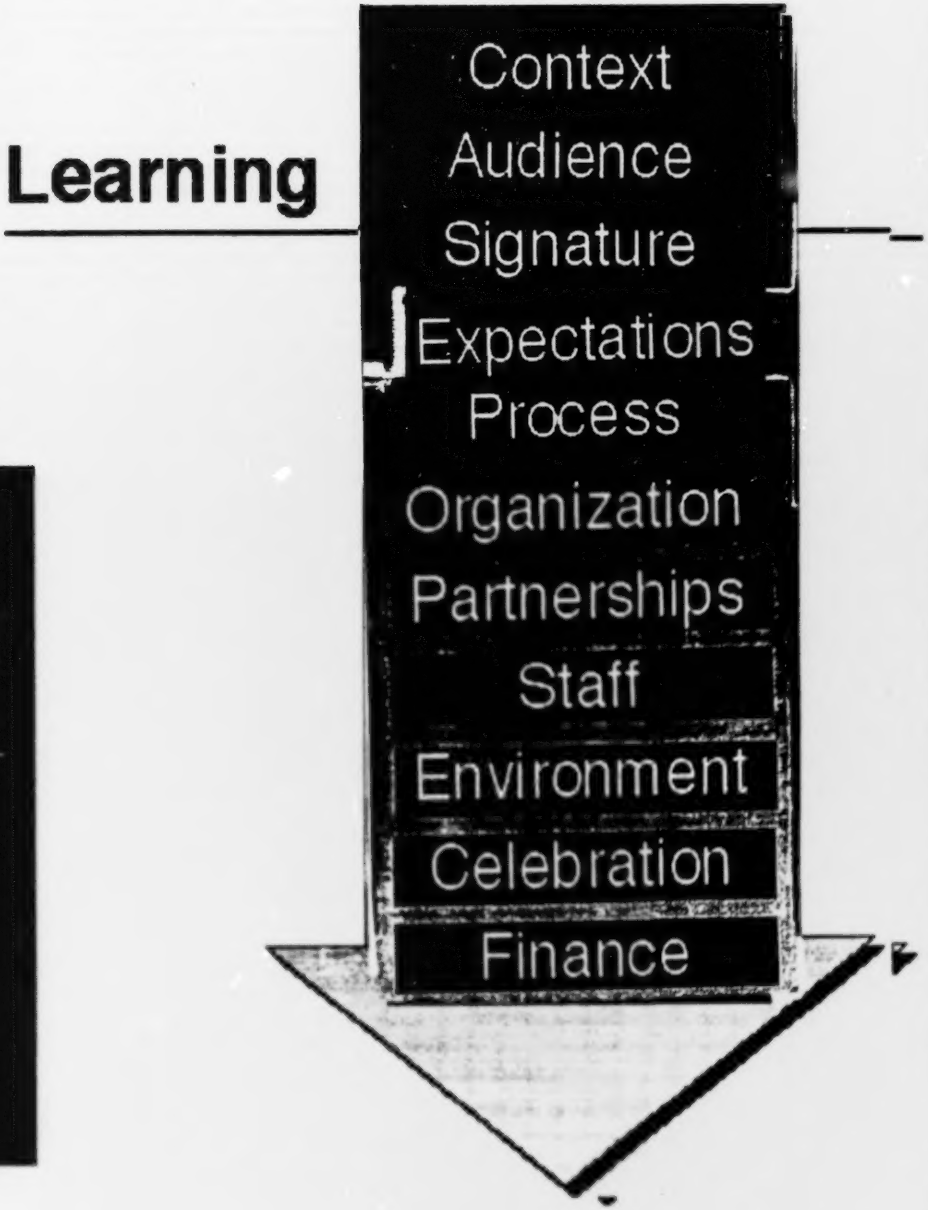
6. Respect and understand the democratic process with strong morals, and knowing right from wrong. Learn to be responsible for the environment and other people.

7. Expect success from all students by allowing students to use alternative methods and activities to suit their particular learning style.

8. Experience success on local and National exams.

Process

The learning process consists of the design for curriculum, instruction, and assessment although the nature of these elements will change.



Learning

Context
Audience
Signature
Expectations
Process
Organization
Partnerships
Staff
Environment
Celebration
Finance

Learning Process

Design Down emphasizes moving from learning expectations directly to identification of learning products that would demonstrate that the learning expectations have been achieved. This includes focusing on the identification and design of learning projects that would result in the desired learning products. These learning projects, which consist of learning events or activities, naturally and strategically link assessment, curriculum, and instruction: assessment is continuous, curriculum is interdisciplinary, and instruction is "construction" with learners as active participants building their own personal knowledge. With this strategy, subject areas are necessarily and naturally integrated, learning inside the school and in the community are both valued and closely coordinated, and learning is viewed as a continuous process.

The following is the learning process for the school at Grafarholti:

-Align with the learning context, audience, signature, and expectations

-Use individual, small group, and large group learning

-Include learning in multiple settings (outdoors, internet, elderly care center, homes and within the school)

-Integrate the subjects

-Integrate learners of different ages

-Use technology throughout (i.e., gather information, communicate, visualize, produce, present)

-Involve students in managing their learning; learners are taught to take responsibility to plan, organize and maintain their environment

-Use ‘hands-on’ learning (projects, problems, presentations)

-Involve teachers working together and being trained in new teaching methods

Learning Process 1

-Use teachers from the community

-Build the self-esteem of each learner

-Require performance by learners (often with real audiences)

-Engage the learner in inquiry (research) and knowledge construction (i.e., interview, data search, library work)

-Be personalized to the needs of the student

-Address the real needs of the community; produce useful products and services

-Create a strong sense of community in the school and link with the external community

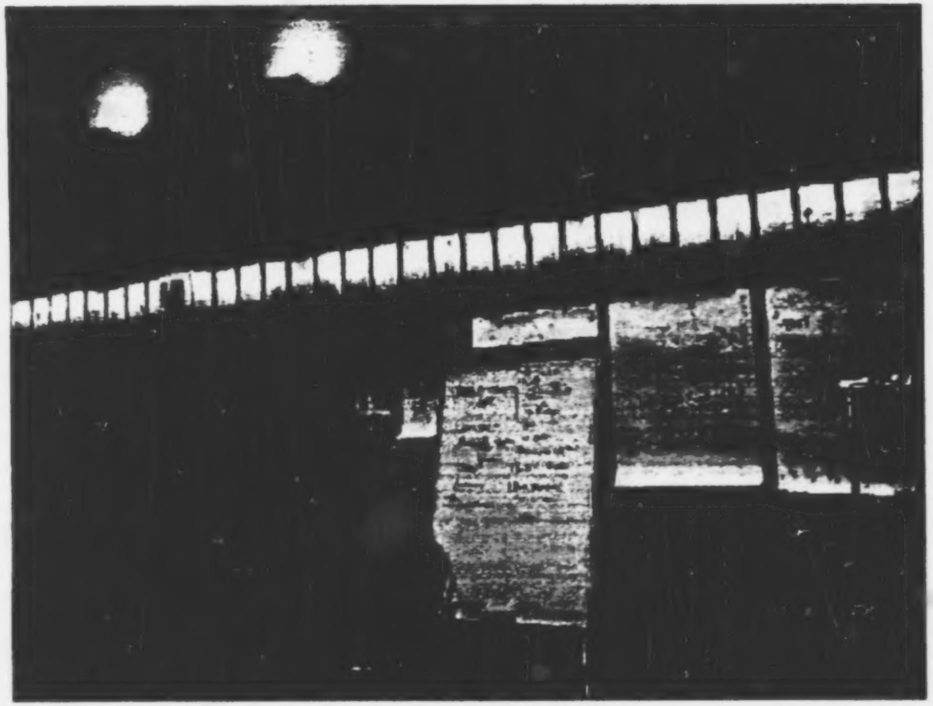
-Excite and motivate each learner

-Evaluate the outcomes by multiple methods such as continuous feedback and National exams

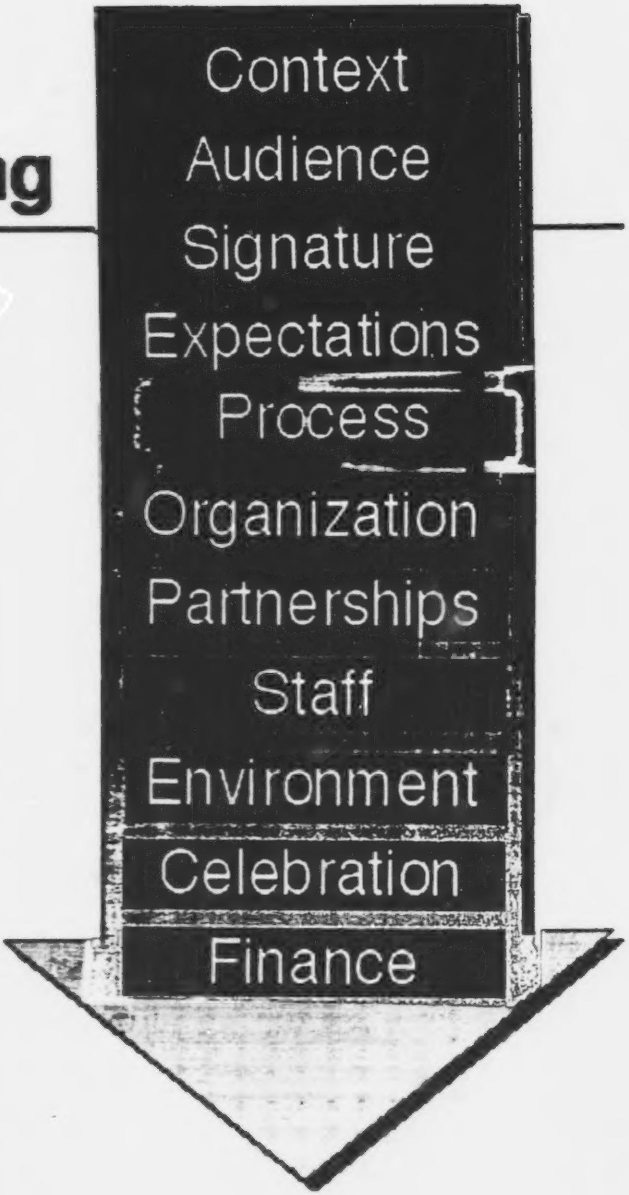
Learning Process 2

Environment

The learning environment includes decisions about technology, equipment, and facilities.



Learning



Context

Audience

Signature

Expectations

Process

Organization

Partnerships

Staff

Environment

Celebration

Finance

Learning Environment

It is important to be clear about the desired features of the learning experience as a basis for designing a supporting learning environment. The learning environment extends well beyond the school building to include all of the learning settings used by learners (for example, workplace, home, public library, and community). Smaller learning environments placed strategically around the community optimize the use of partnerships. The close blending of school and community ensures that learning is rigorous and relevant. A learning environment networked by computers provides each learner with essentially her or his own school. Designing the learning environment begins with a detailed review of the learning process, organization, partnerships, and staffing, and then developing the best supporting environment

The learning Environment was approached through the four signature themes:

Nature

1. Bring nature and flow into the school.
2. Stream or creek to flow through the school.
3. Direct link to outdoors from the teaching spaces.
4. Glass walls (able to see into the earth or flowing water, sky etc.) but control sun.
5. Environmentally friendly materials
6. Windows – operable – take advantage of the views.
7. Natural air conditioning (not electrical)
8. Garden inside and out.
9. Sod roof.
10. Outdoor playground area.
11. Greenhouse to grow vegetables in – plants in the school.

Community

12. Bring community into the school with library, sports, swimming, dining, art gallery, coffee/pastry shop (and the school moves out into the community).

13. Heart of school as open Forum space in middle of school – like City Hall – reinforces idea of Democracy.

14. Parent's room.

15. Connection to celebration of millennium of Christianity.

16. Components of school are like neighborhood components.

17. 'Village green'.

18. Visual connections between the Forum and the new church.

19. Relate to nearby commercial (with parking etc.).

20. Dining Room

Spirit/Well-being

21. Soft colors and lighting
22. Pleasant acoustics.
23. Pupils, School Staff and Parents interface and develop spirit & well-being.
24. Strategically place windows to frame the views.
25. A greeter at the front door – friendly entry – welcoming space – ‘homey’ feel to the school.
26. Signature to be seen and felt in the building.
27. Space for spiritual meditation – well-being of the student
28. ‘Pillow rooms’.

Flow

29. Flow of space
30. Caretaker brings in a cart to the classroom with what's needed 'Art-on-a-cart' for example.
31. Joint maintenance by gardeners & school staff of school grounds.
32. 5 'houses' of 80 students each.
33. Multi-age groupings – two grades together
34. Transition space between small group/individual areas and Forum space.
35. Flexibility.
36. Private workstations for students
37. Multiple learning environments and spaces of different sizes.
38. Glass cave for staff – 'fishbowl'
39. Research/information center – library (with cozy corners), computer lab.

Guiding Principles

Before beginning the design of the learning environment it is important to be clear about the design of the other learning elements. The following principles were established.

-Aligns with the learning context, audience, signature, and expectations
-Uses individual, small group, and large group learning
-Includes learning in multiple settings (outdoors, internet, elderly care center, homes)
-Integrates the subjects
-Integrates learners of different ages
-Use technology throughout (i.e., gather information, communicate, visualize, produce, present)
-Involves students in managing their learning; learners taking responsibility to plan and organize

Guiding Principles

Continued.

-Uses active learning (projects, problems, presentations)

-Involves teachers working together

-Use teachers from the community

-Builds the self-esteem of each learner

-Requires performance by learners (often with real audiences)

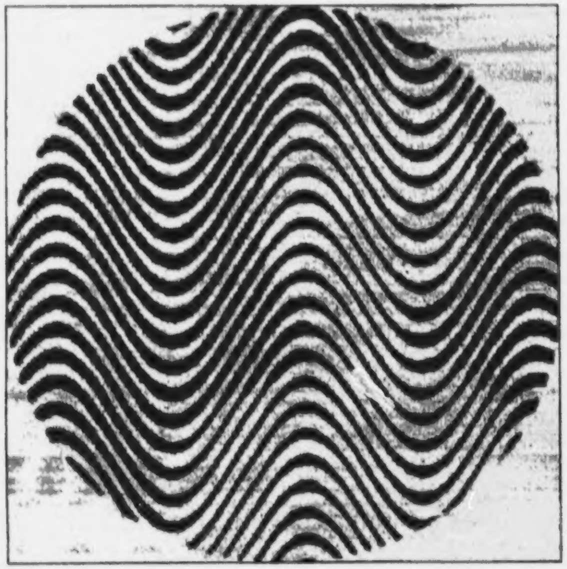
-Engages the learner in inquiry (research) and knowledge construction (i.e., interview, data search, library work)

-Personalized to the needs of the student

-Addresses real needs of community; produce useful products and services

-Creates strong sense of community in the school and links with the external community

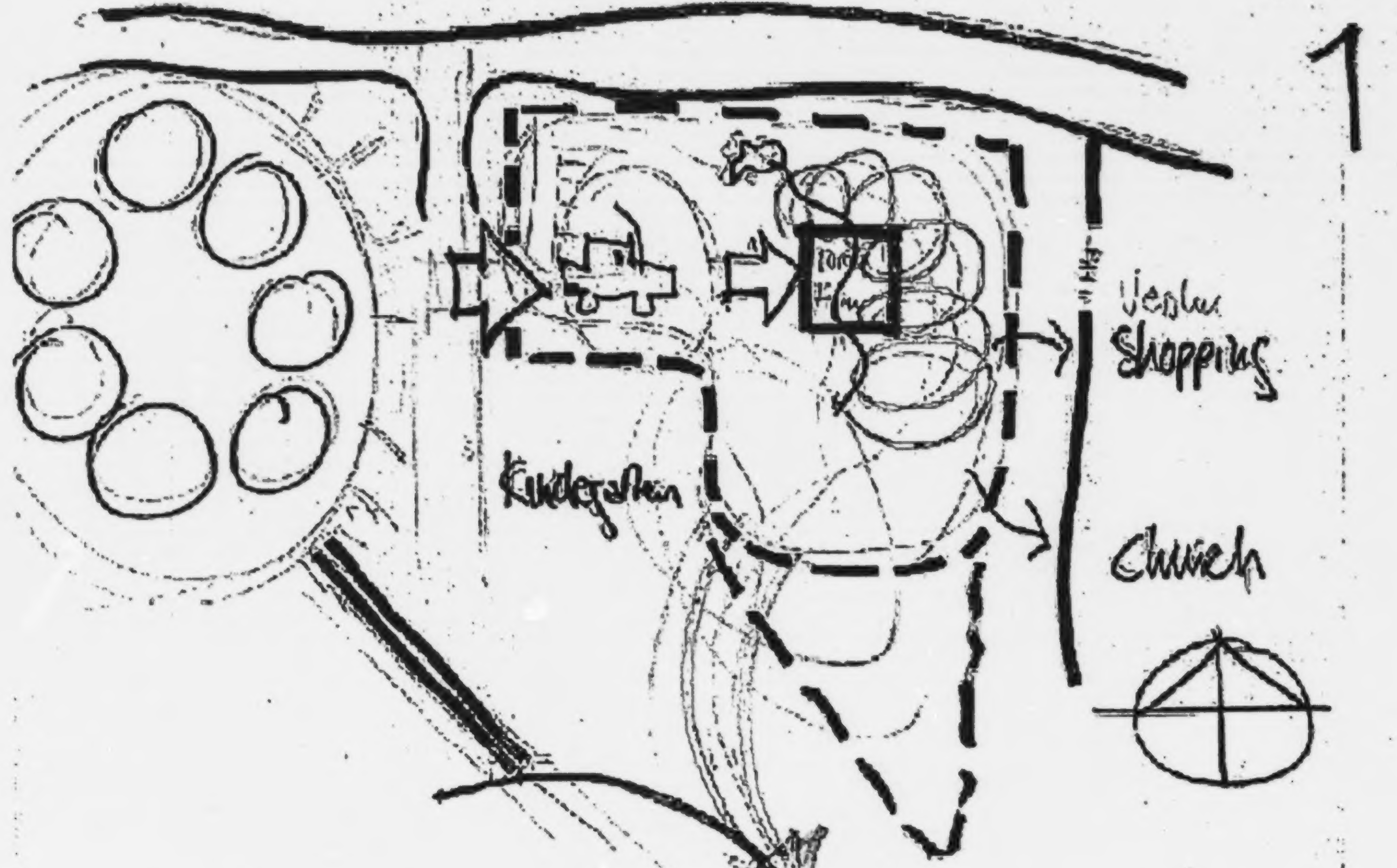
-Excites and motivates each learner



Learning Environment

Upon being clear about the approach to learning covered in the previous design down steps, the committee took on the task of designing the new school at Grafarholti.

The following are their designs.



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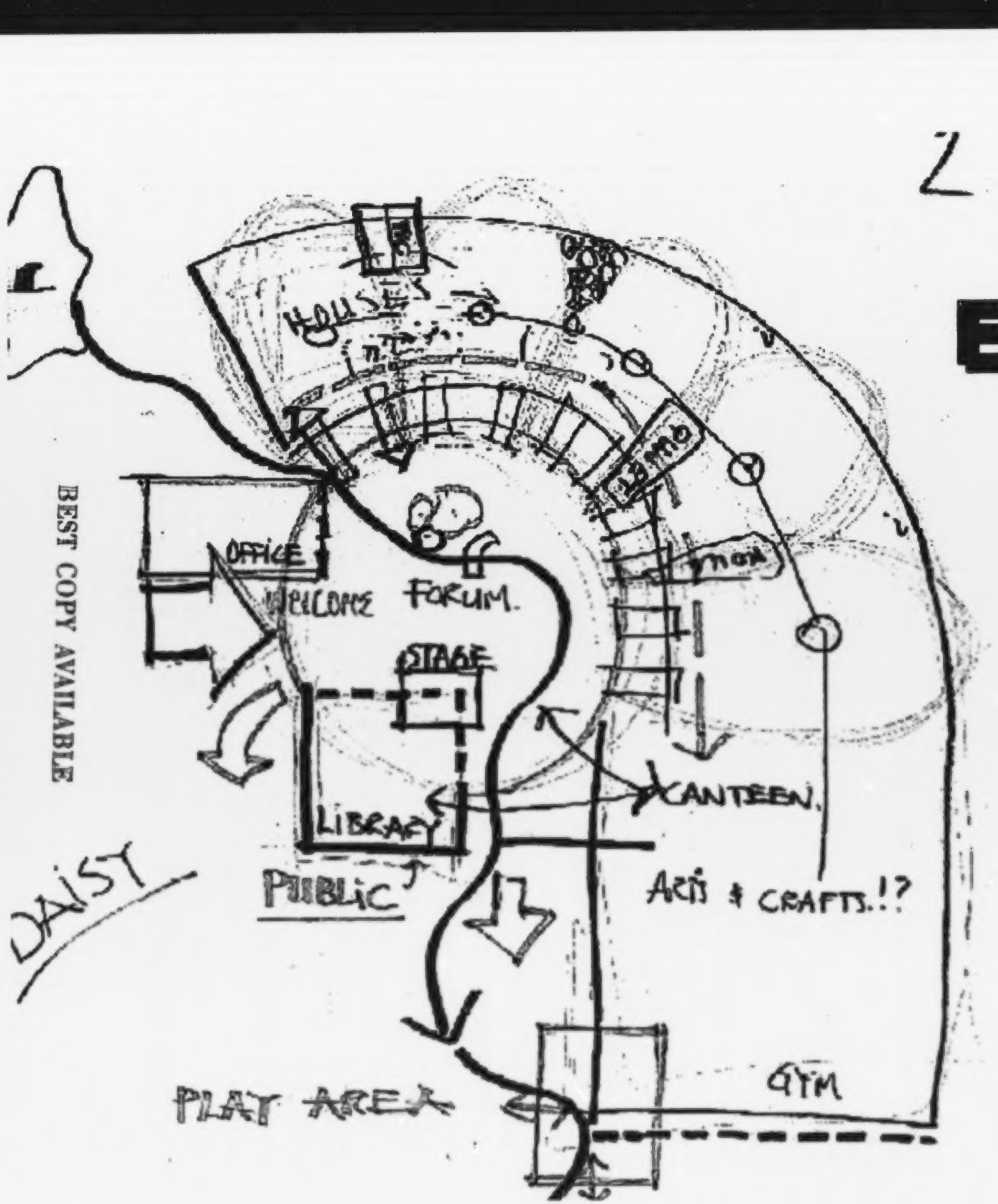
Learning Environment 1

Site

Learning Environment
1



Plan

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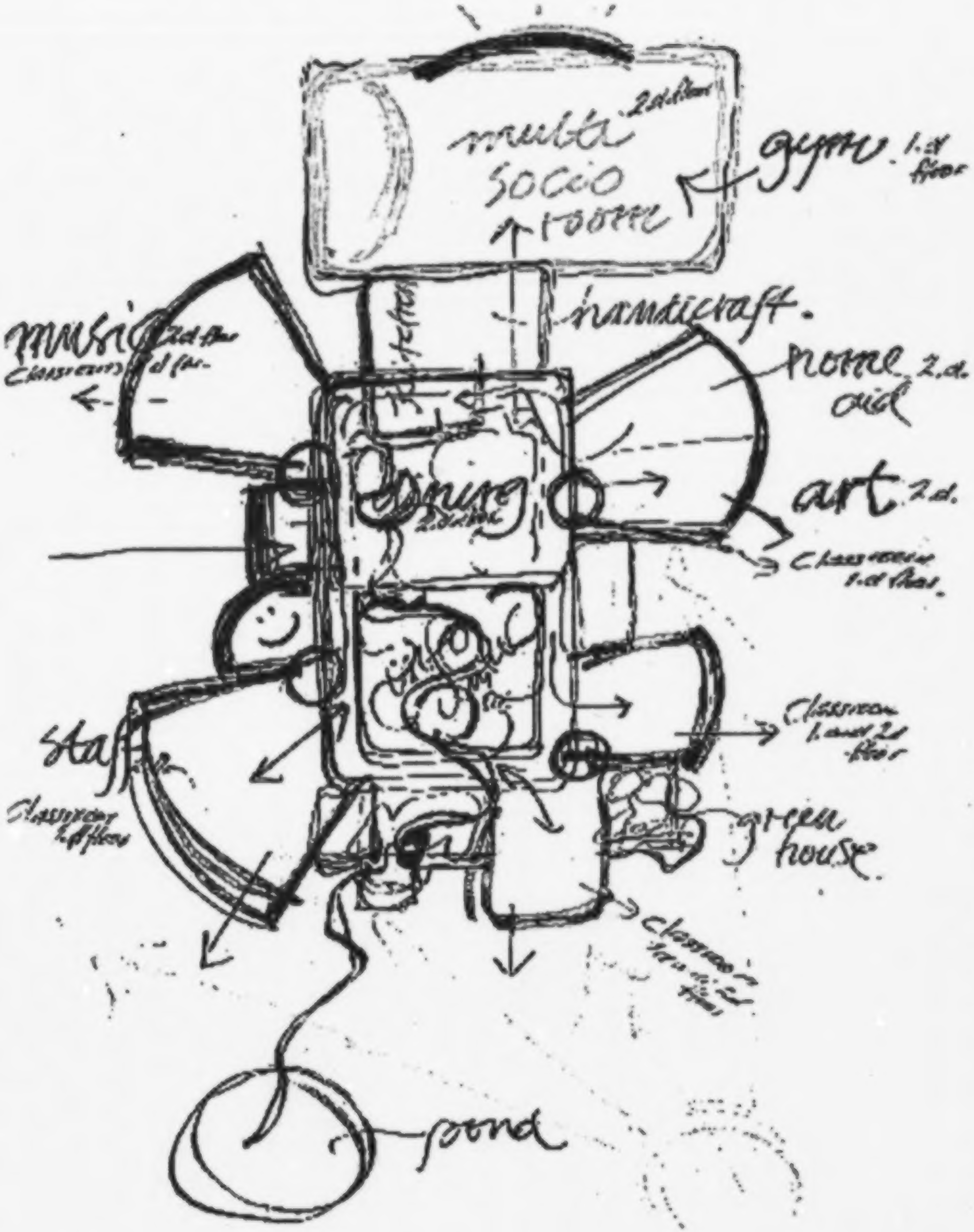
Learning Environment 2



Plan

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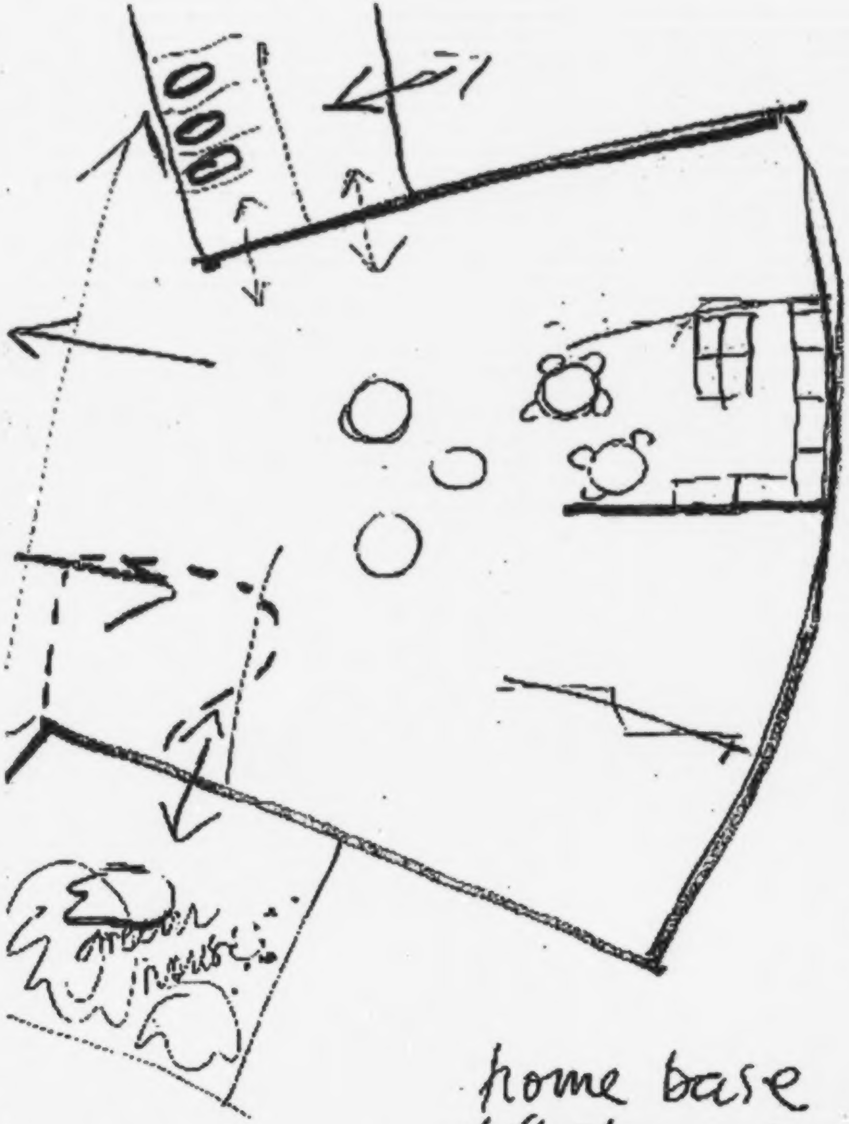
Learning Environment
2



home base
differ/young/older

Plan of Family

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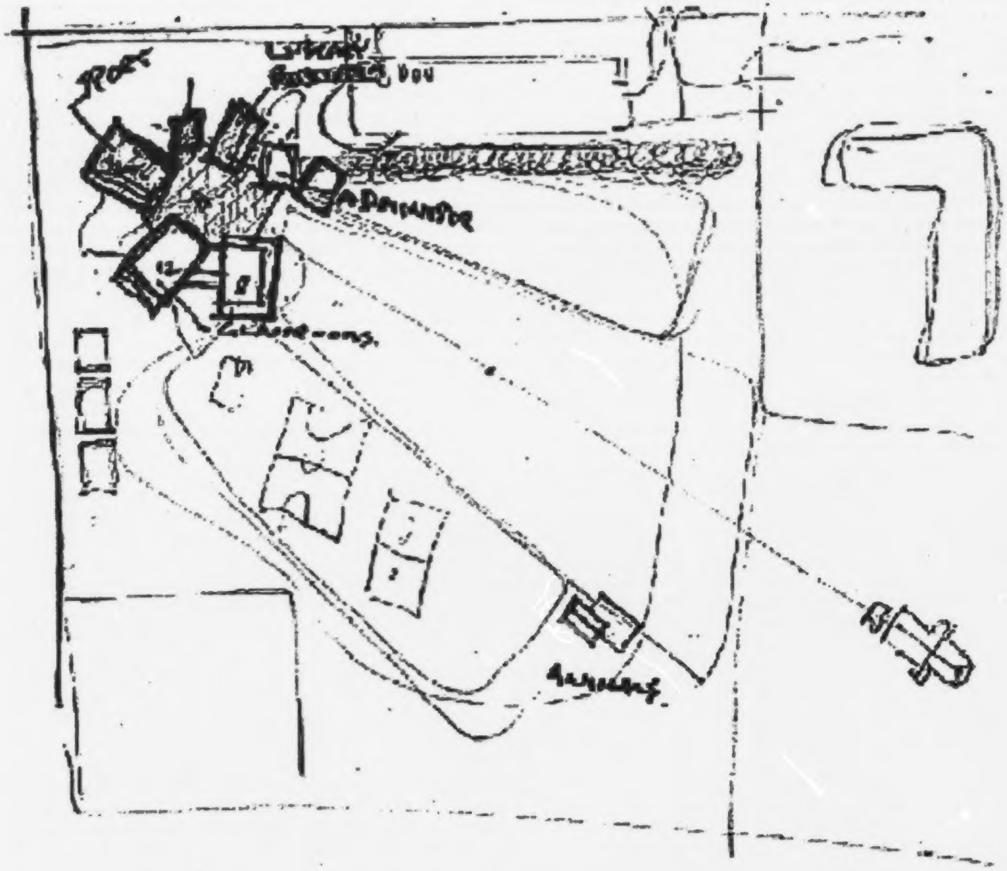
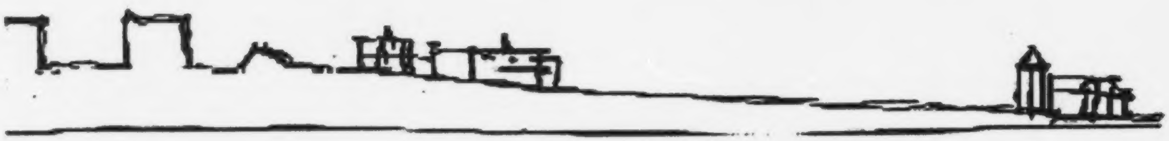
Learning Environment
3

Site



Section



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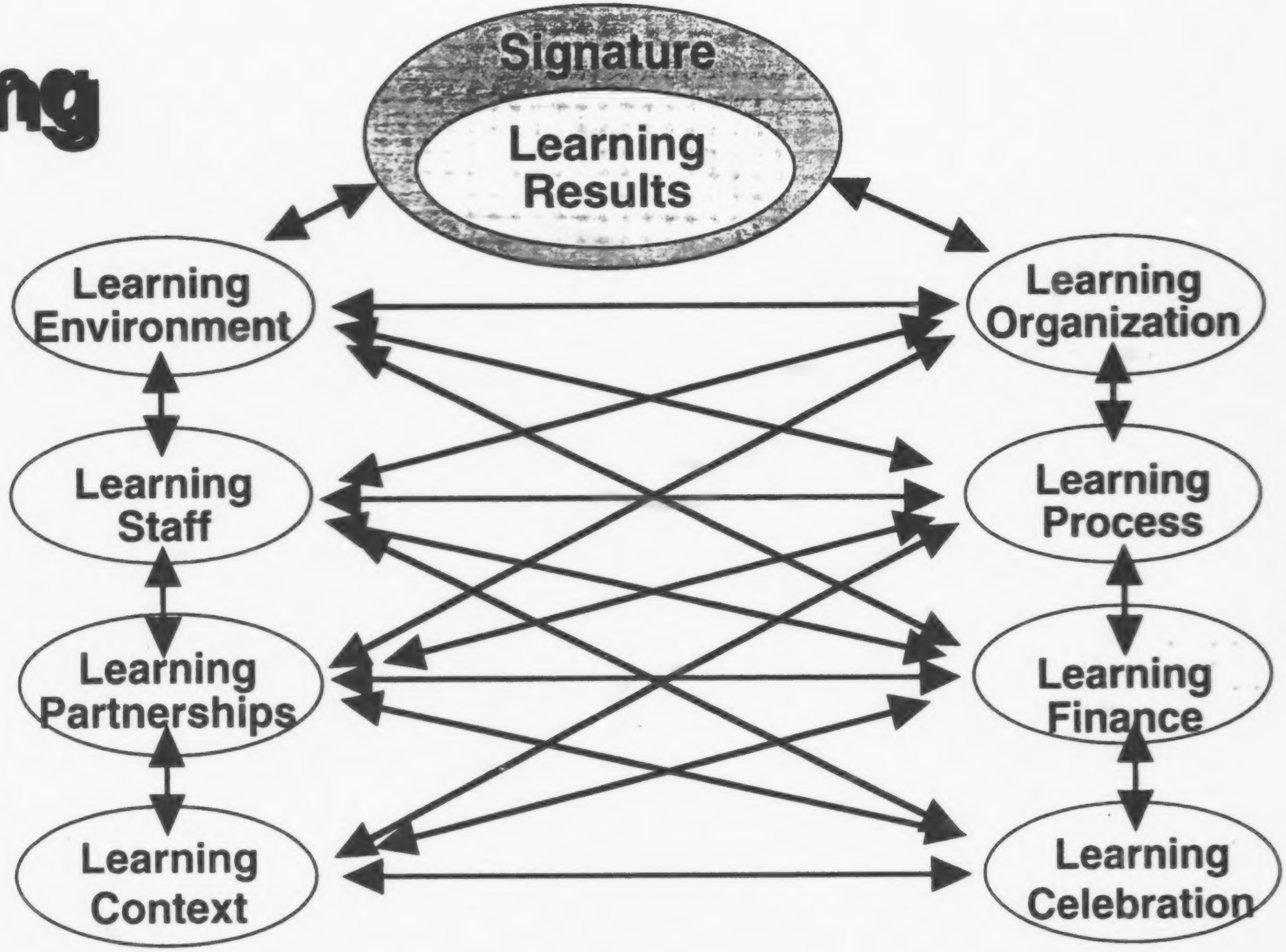
Checking Up



The Design Down Process was completed by confirming that all the elements were in alignment with each other.

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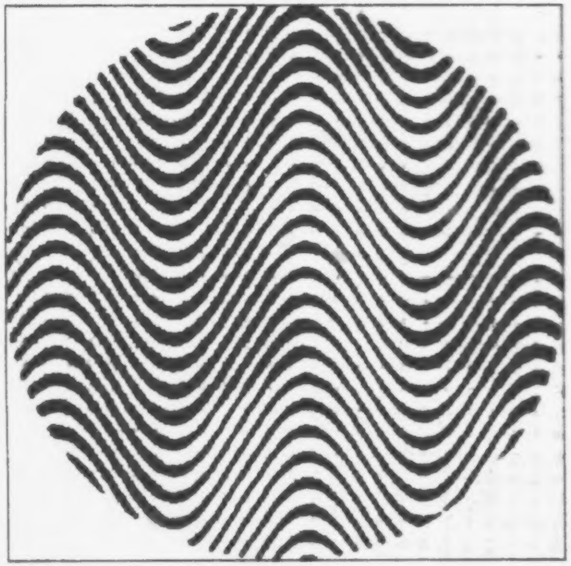


3. Site

The next design concern is the Site.

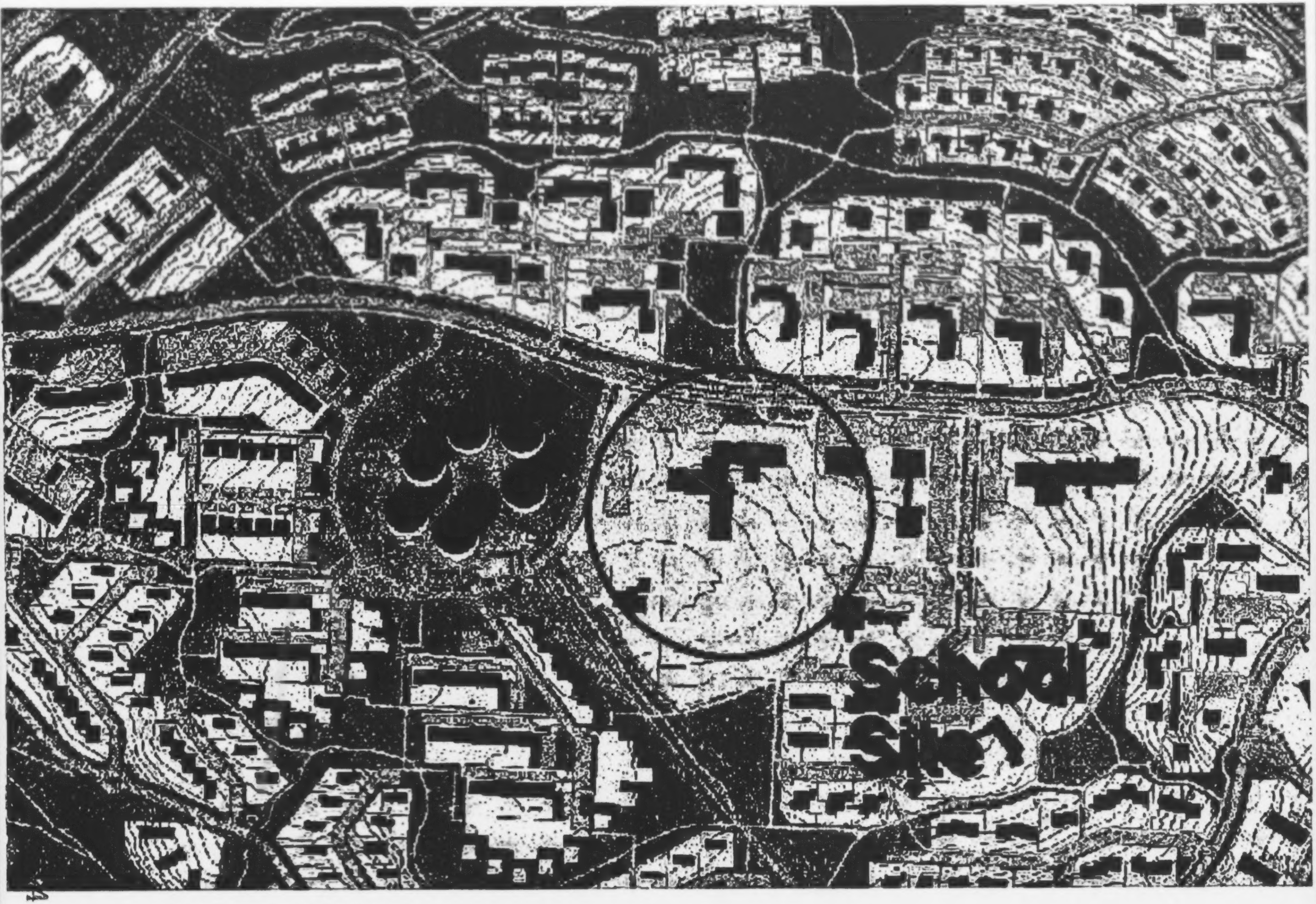
Located on the top of a hill in the center of the new neighborhood development, the site is a major element in shaping the final design.

Most predominate adjacent to the site are the geothermal hot water tanks. These very large tanks store water pumped from "hot spots" around the country before it flows into the Reykjavik district heating system. Iceland uses very little fossil fuels.

The school site is in the center of the new "Neighbor Center" making learning the center of community.

Site & Tanks

Site photo with domineering Tanks



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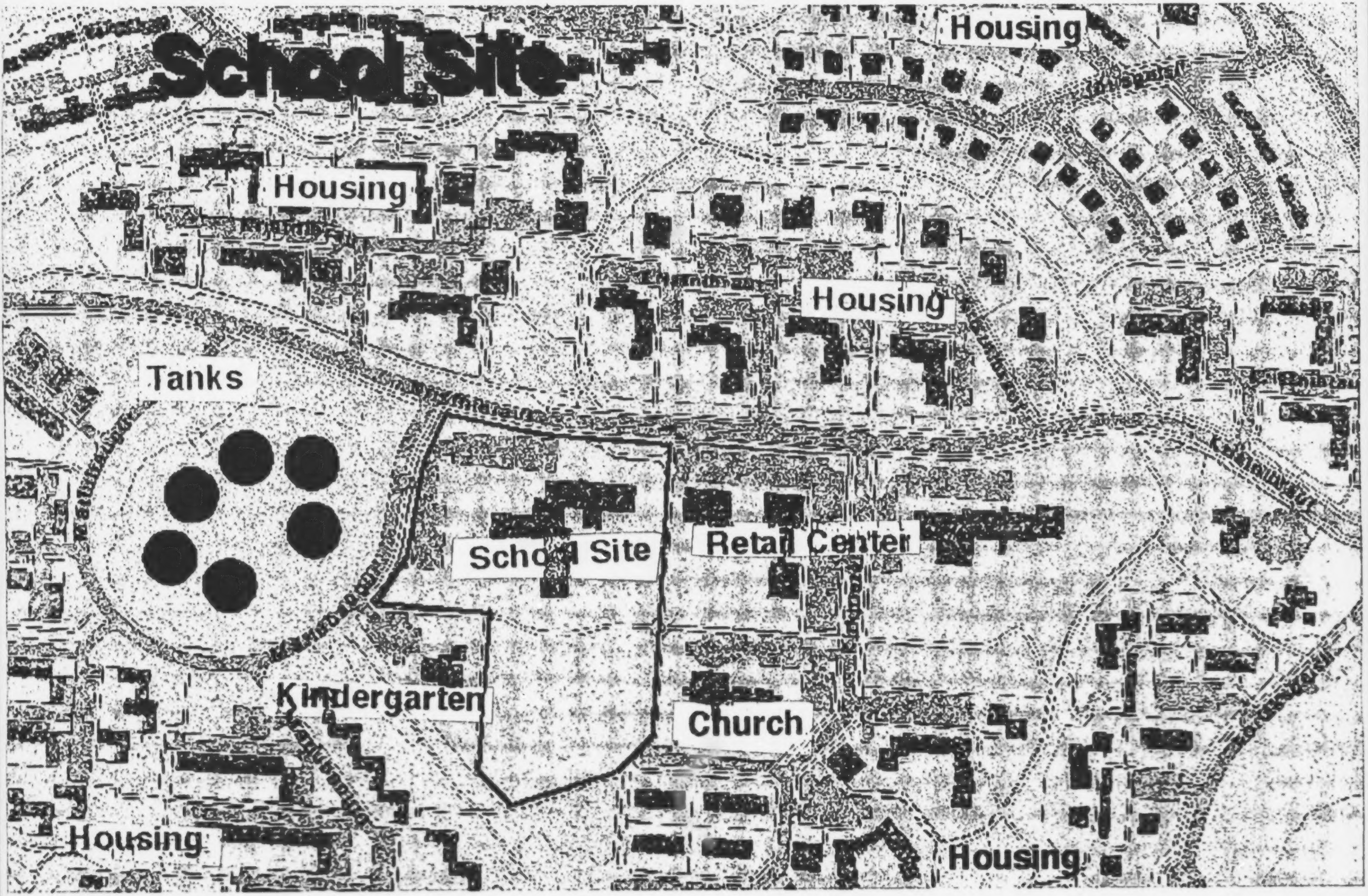
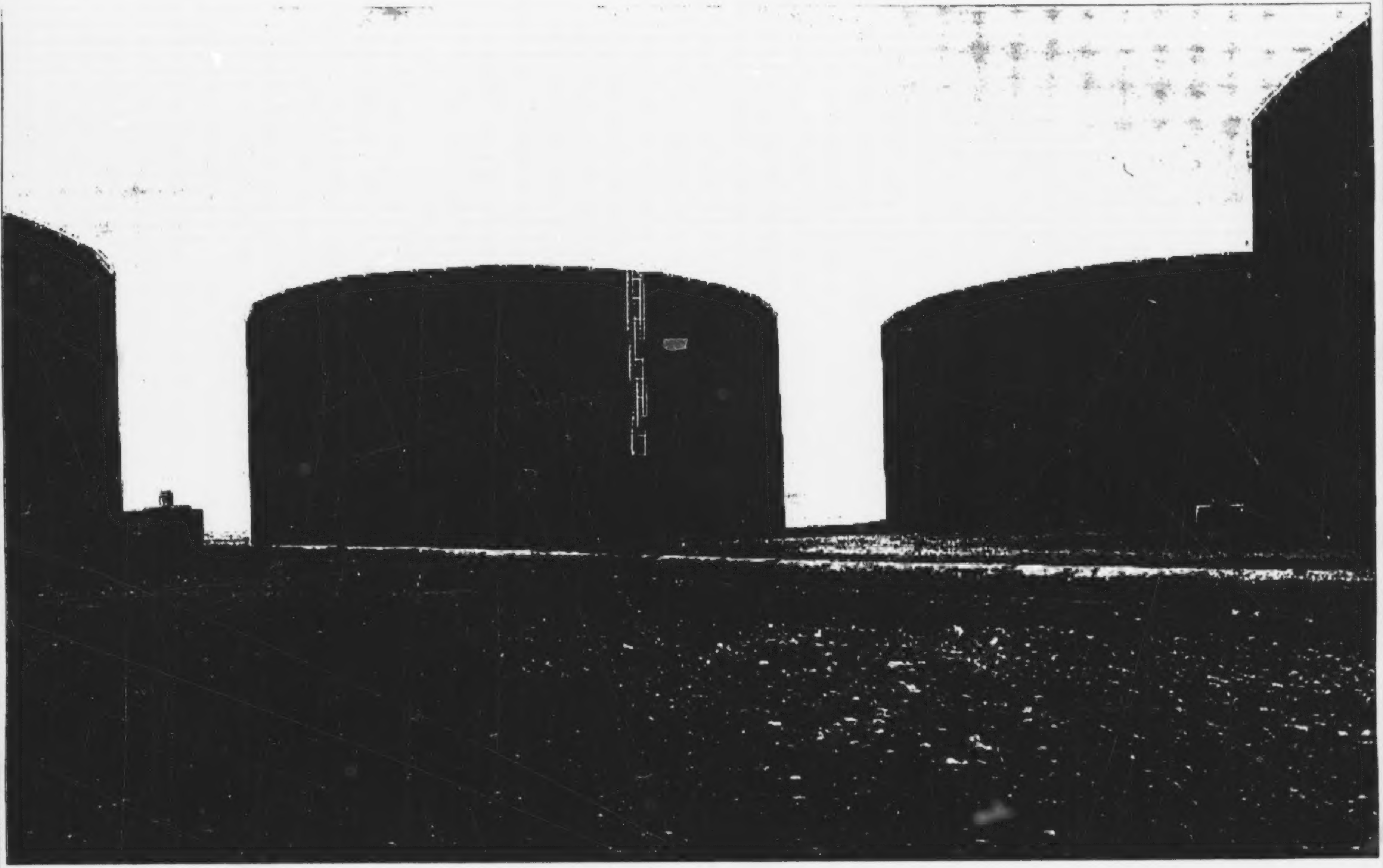
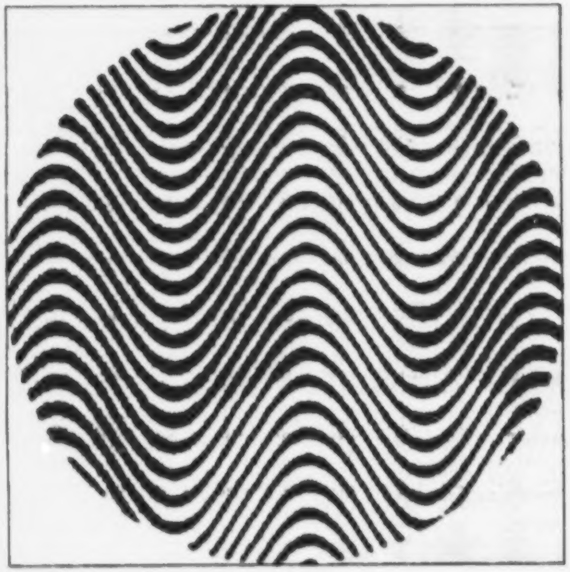

School Site
Housing
Housing
Housing
Tanks
School Site
Retail Center
Kindergarten
Church
Housing
Housing



Tanks

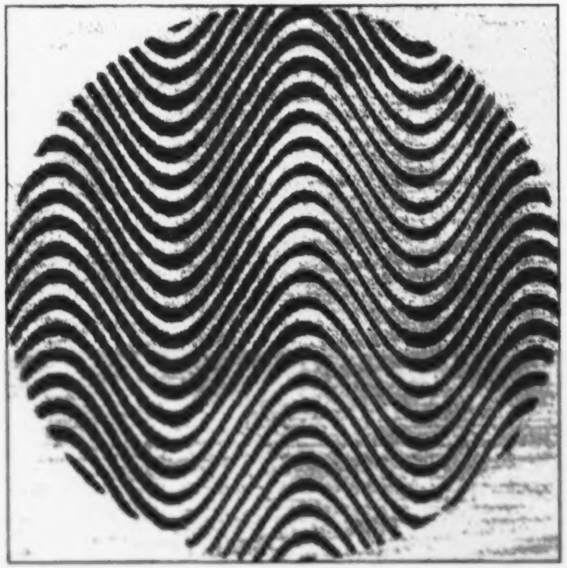


4.
Landscape

The Landscape is a strong element in Icelandic Culture.

Nature and the landscape are powerful elements in shaping the culture of Iceland. This is imbedded in the Signature and is carried into the learning environment design.

The following photographs depict the connection of the landscape and the design.



5.
Historic Precedents

Iceland's historical man-made environment is also a source in establishing a design concept.

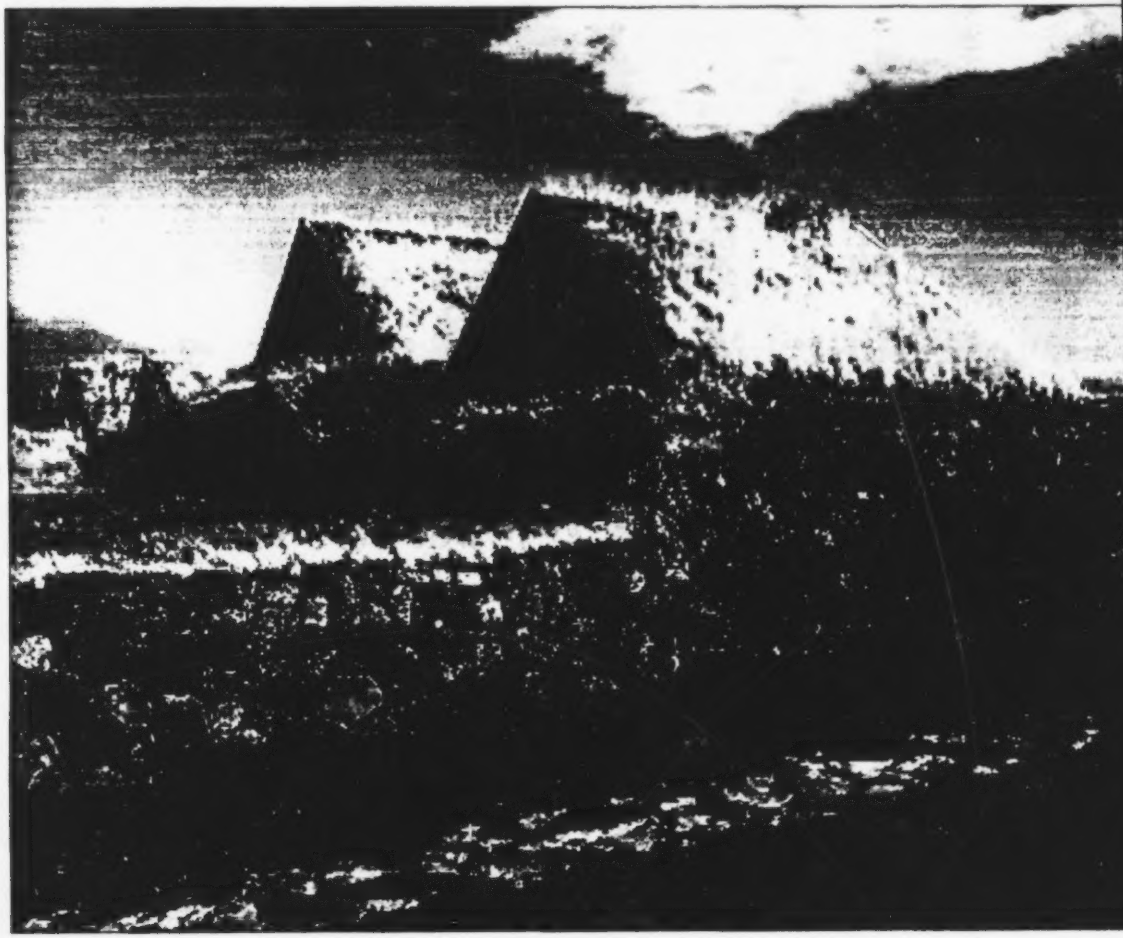
Iceland

Historic
School

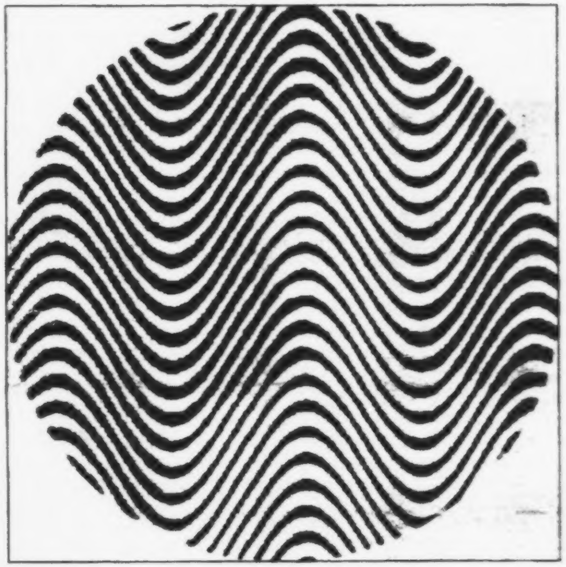
Historic
Political
Center

Iceland

A-B-A Rhythm



Sod Roofs &
Stone Walls



6.

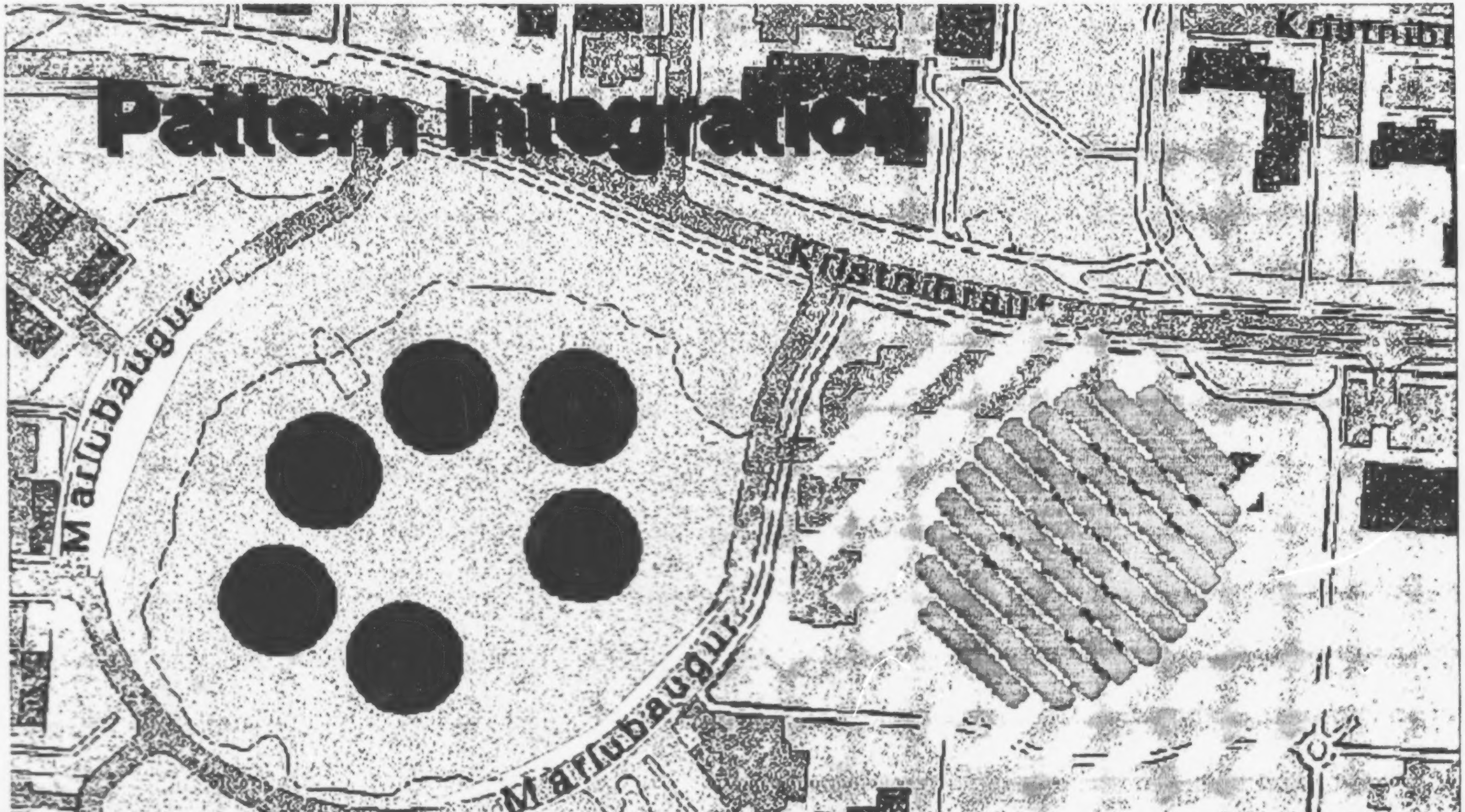
Design Concept

The Design Concept is a synthesis of the Design Down parameters, the Site, the Landscape, and the Historic Precedents.

These components are brought together through a systems ordering process.

To fulfill the promise of the Signature within the shadow of the Tanks, the design concept integrates the patterns of the landscape and the school.

Pattern Integration



Weaving together the landscape and the school!

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Approach

Starting with the A-B-A Rhythm from the Historic Precedents, the patterns of the earth (Stone) and the grass (Sod) are woven together to establish an Integrated Pattern (image 56).

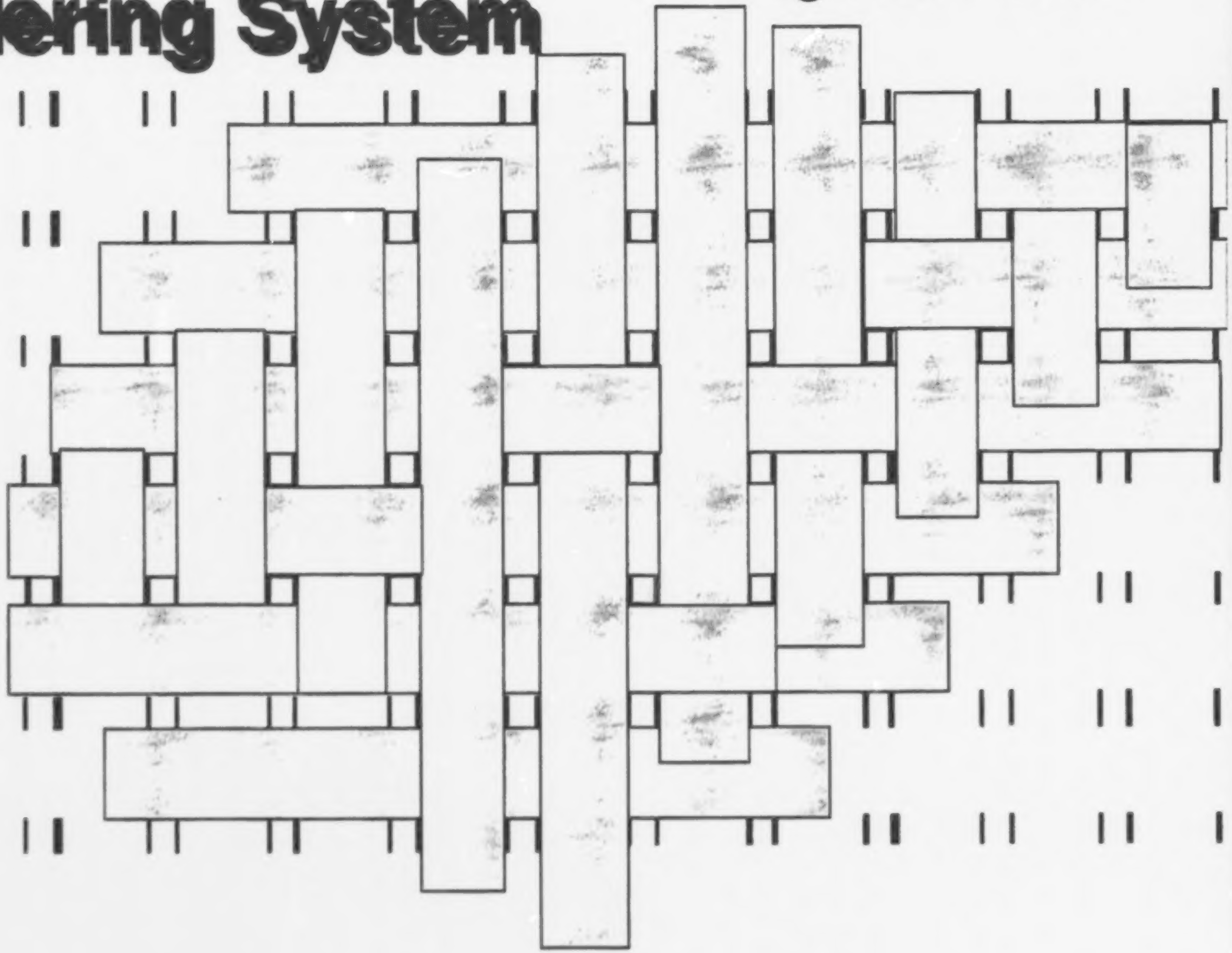
Incorporating the work of the community (image 57), the Integrated Pattern evolves into a plan concept (image 58).

This is then refined into a workable plan (image 59).

The basic building block is a Student Family (image 60).

Ordering System

Integrated Pattern



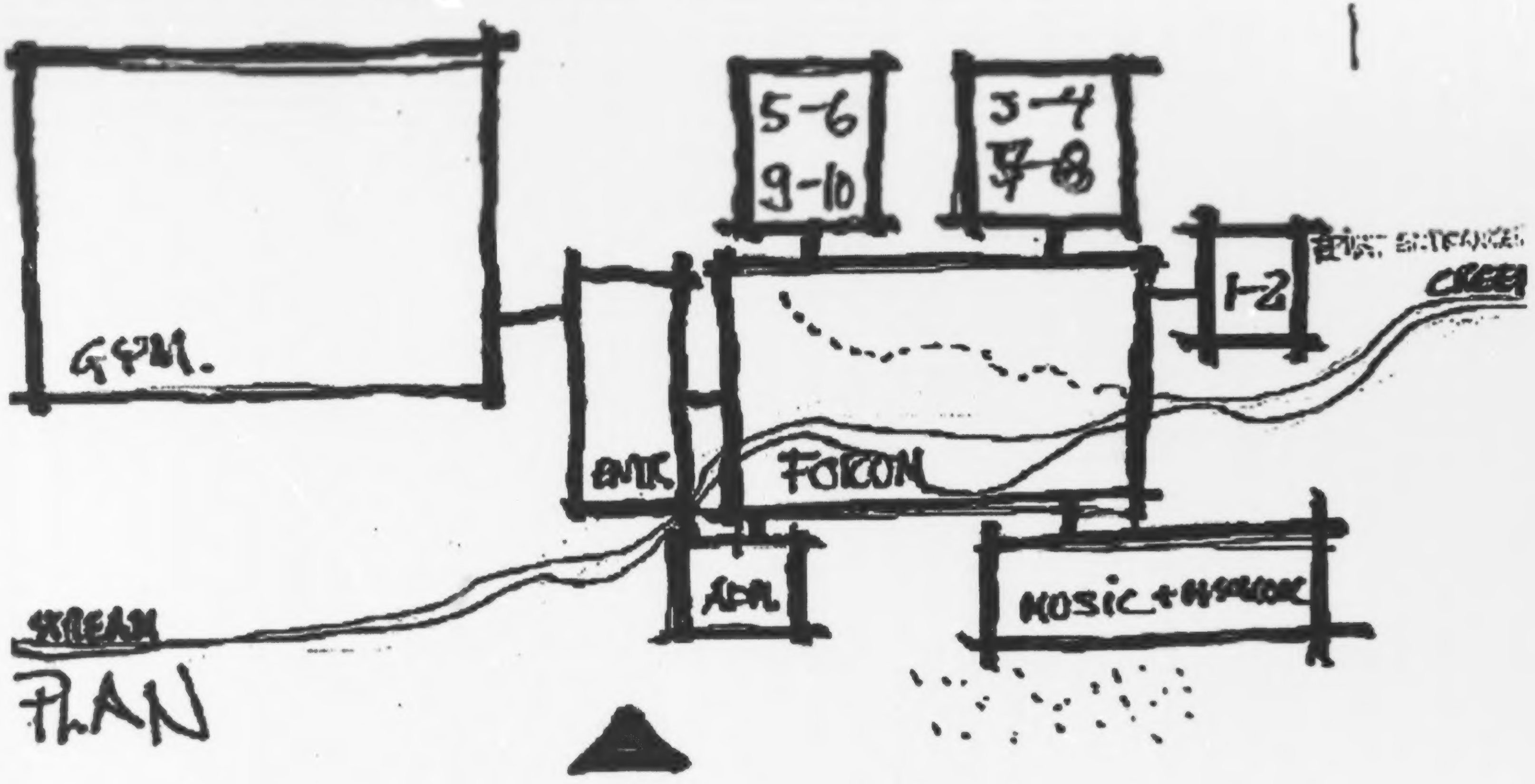
Spacing =
A-B-A
Rhythm

Tan =
Stone
Floor

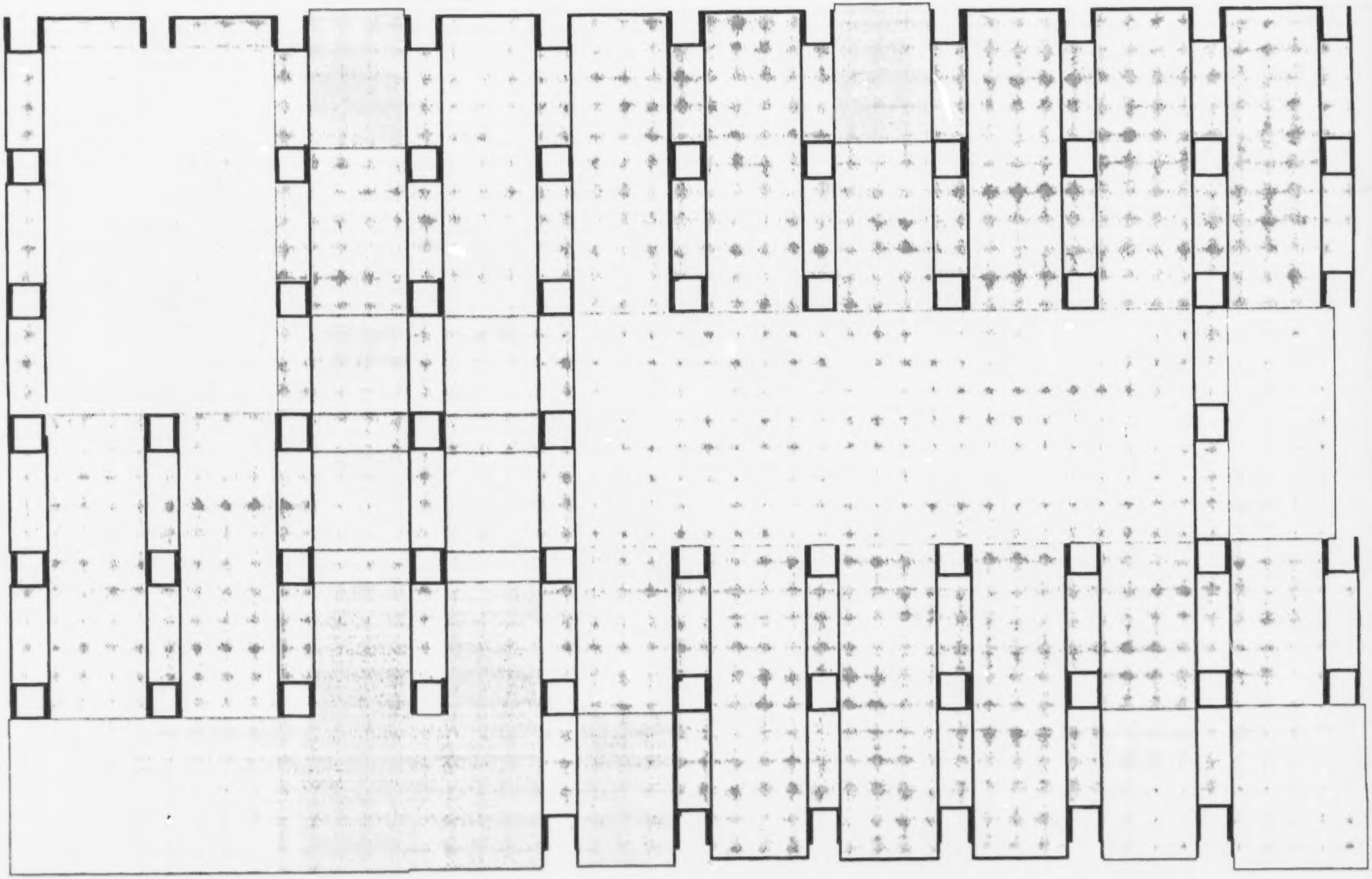
Green =
Grass
Roofs

Learning Environment 3

Plan



The Ordering System Pattern is "configured" by the parameters of the Design Down Process

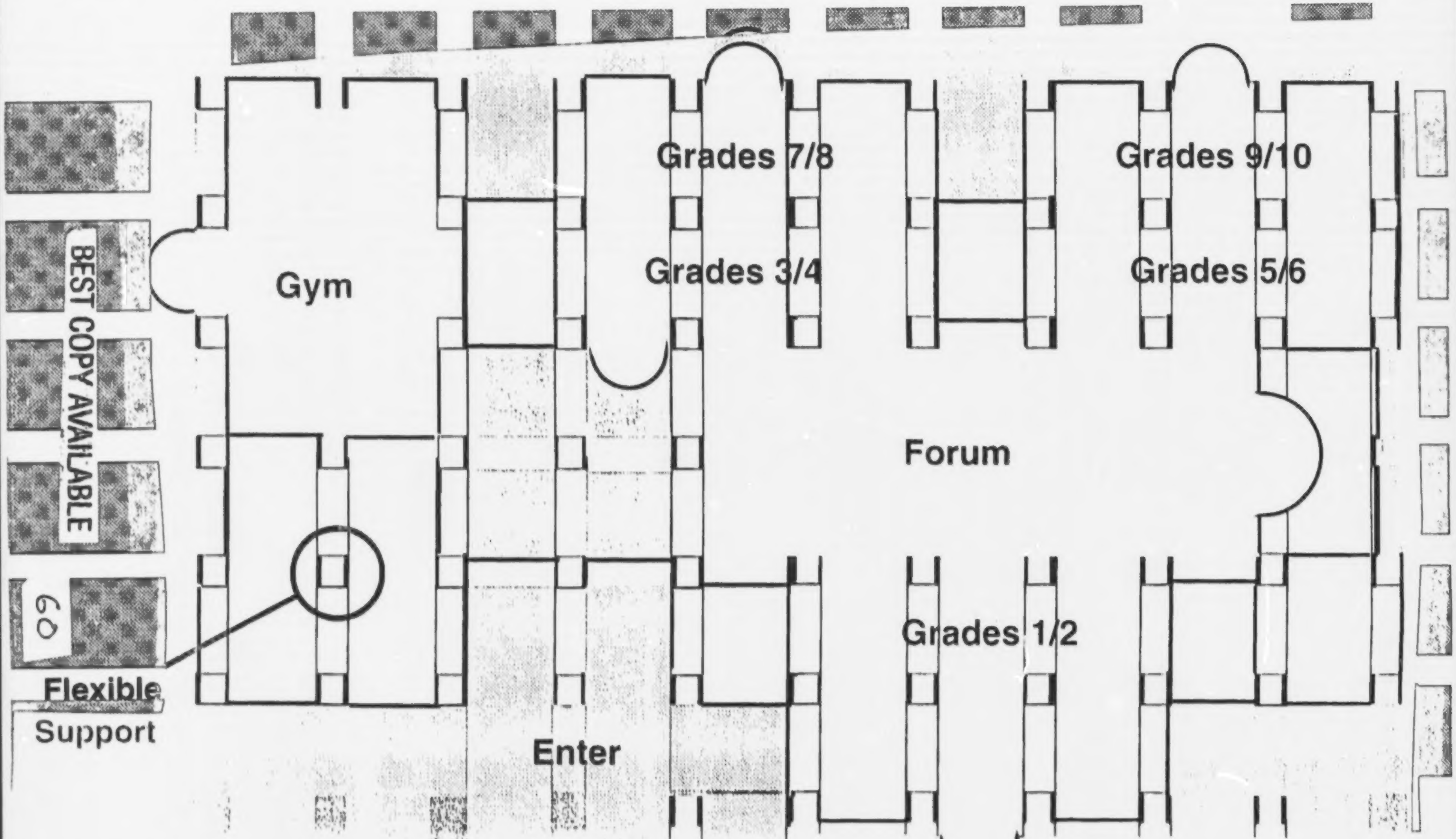


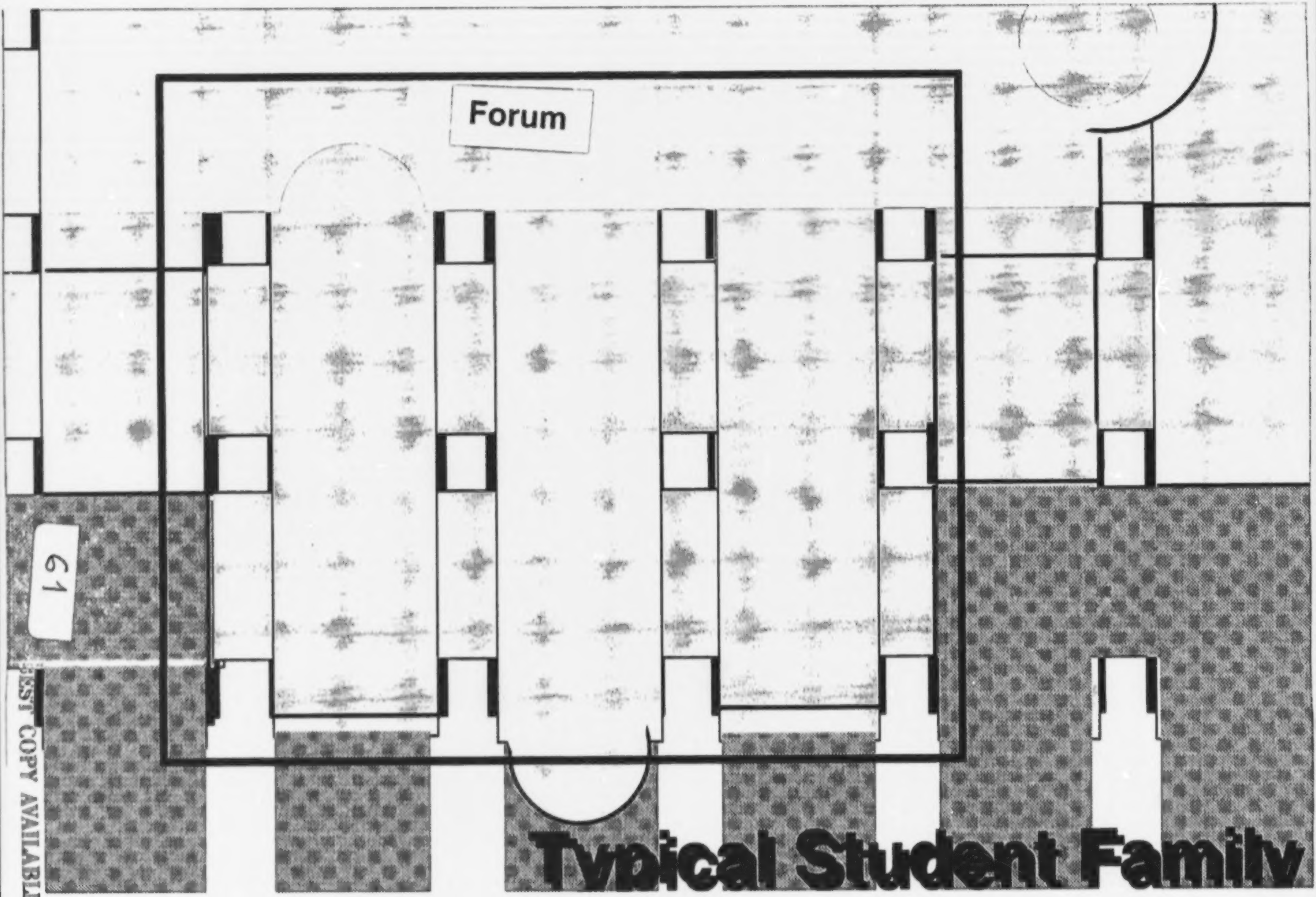
Concept Evolution

Plan Concept

Concept Refinement

Workable Plan





Typical Student Family

The Armature

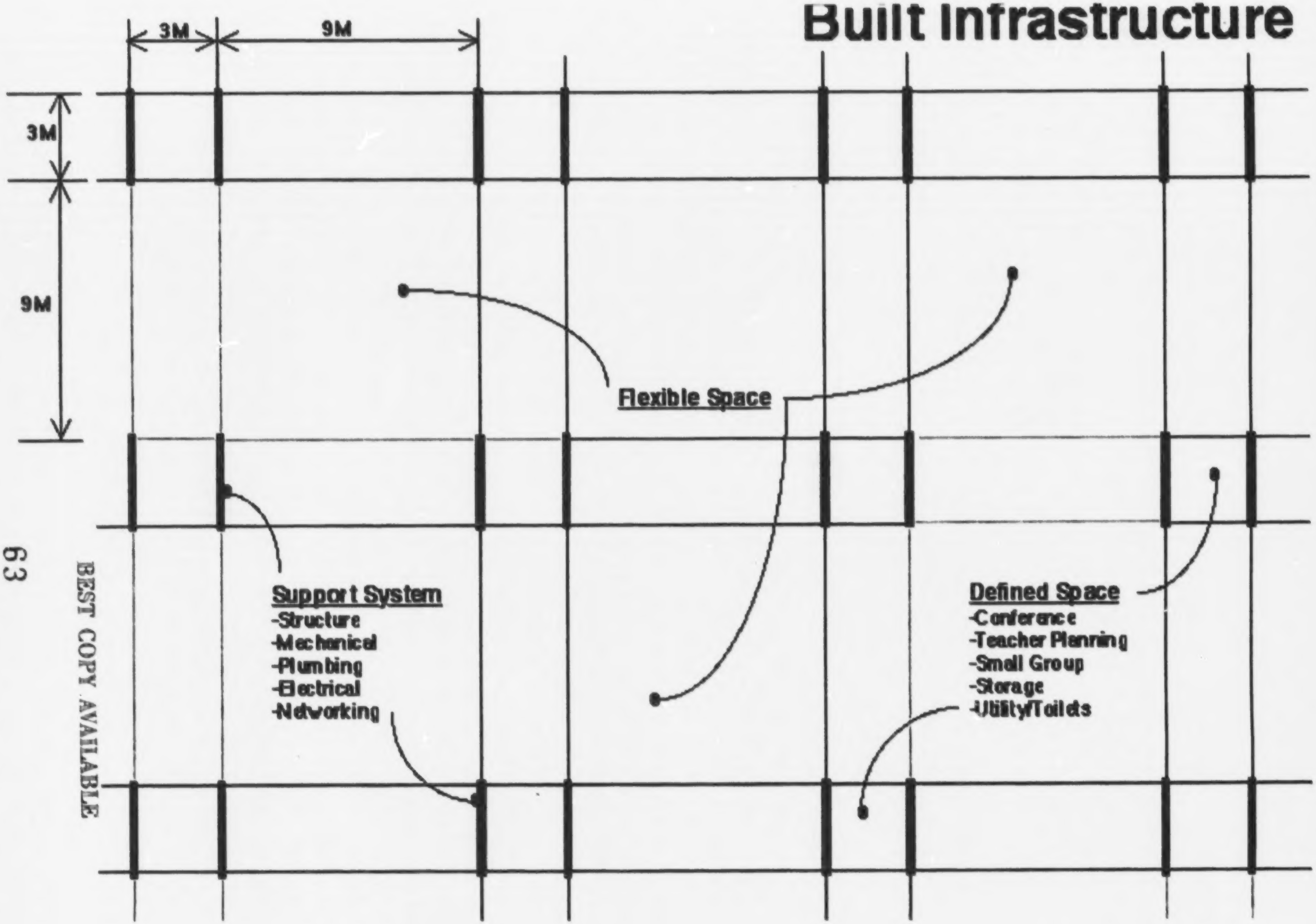
The plan is composed of 3 primary elements (image 62).

1. The Support System: Structural, Mechanical, Plumbing, Electrical, and Networking Systems

2. The Defined Space: Space used for definitive activities (Conference, Teacher Planning, Small Group, Storage, Utility/Toilets).

3. The Flexible Space: The balance of the space defined by the Support System/Defined Space and the perimeter elements (Glass or solid walls and transition space).

Built Infrastructure



Flexible Space

Support System
-Structure
-Mechanical
-Plumbing
-Electrical
-Networking

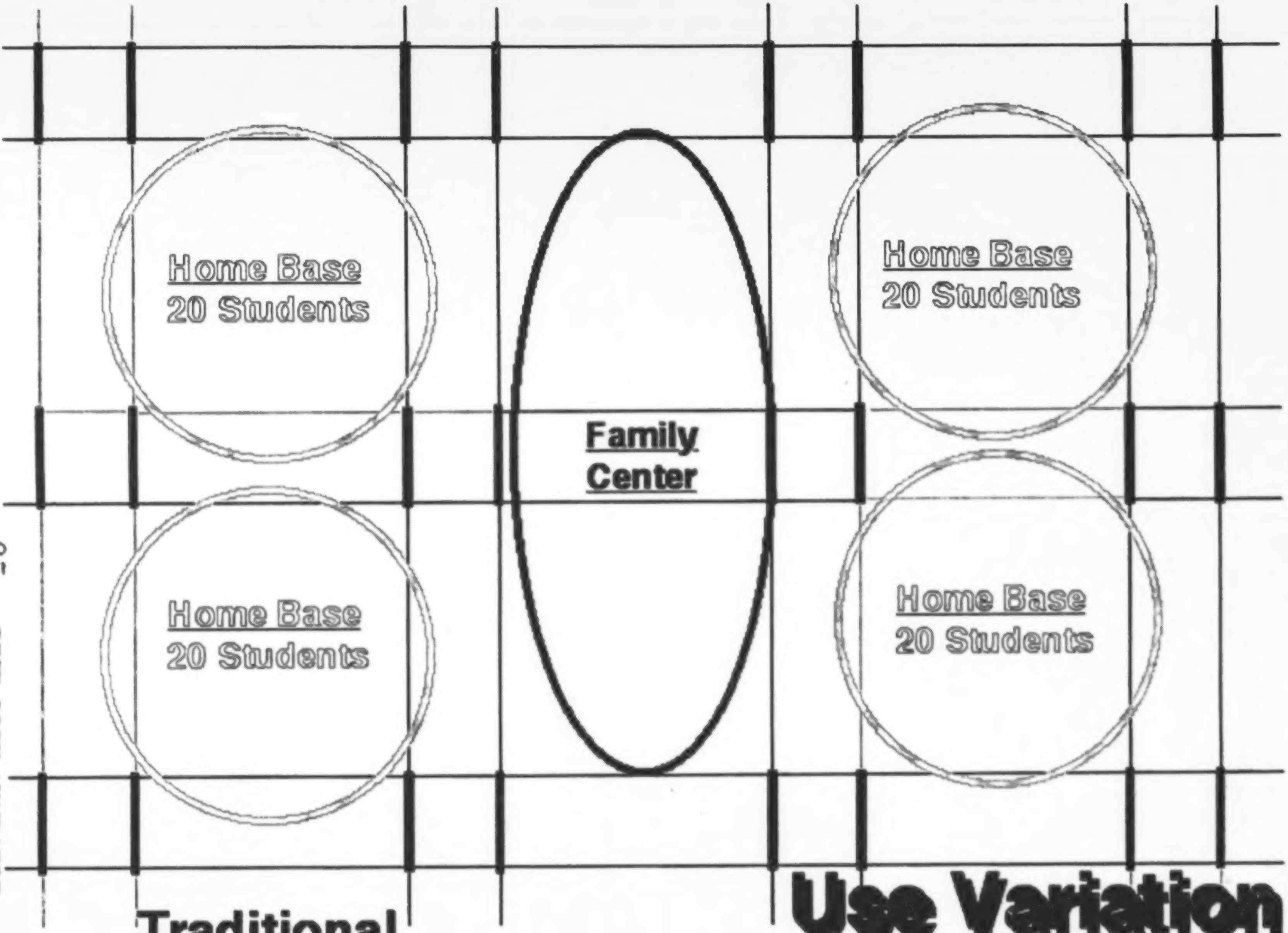
Defined Space
-Conference
-Teacher Planning
-Small Group
-Storage
-Utility/Toilets

Flexibility

Three "Use Variations" are shown (images 64, 65, 66). They are on a continuum from "traditional classroom" to the more recent "students at their own workstations in small groups" to a future focused "learner and teacher determined" possibilities.

Although not shown, space defining elements are intended. These include nonpermanent walls (traditional variation, 64), landscape partitions (team based variation, 65), or what the learners develop (learner determined variation, 66).

Use Variation 1



Home Base
20 Students

Family
Center

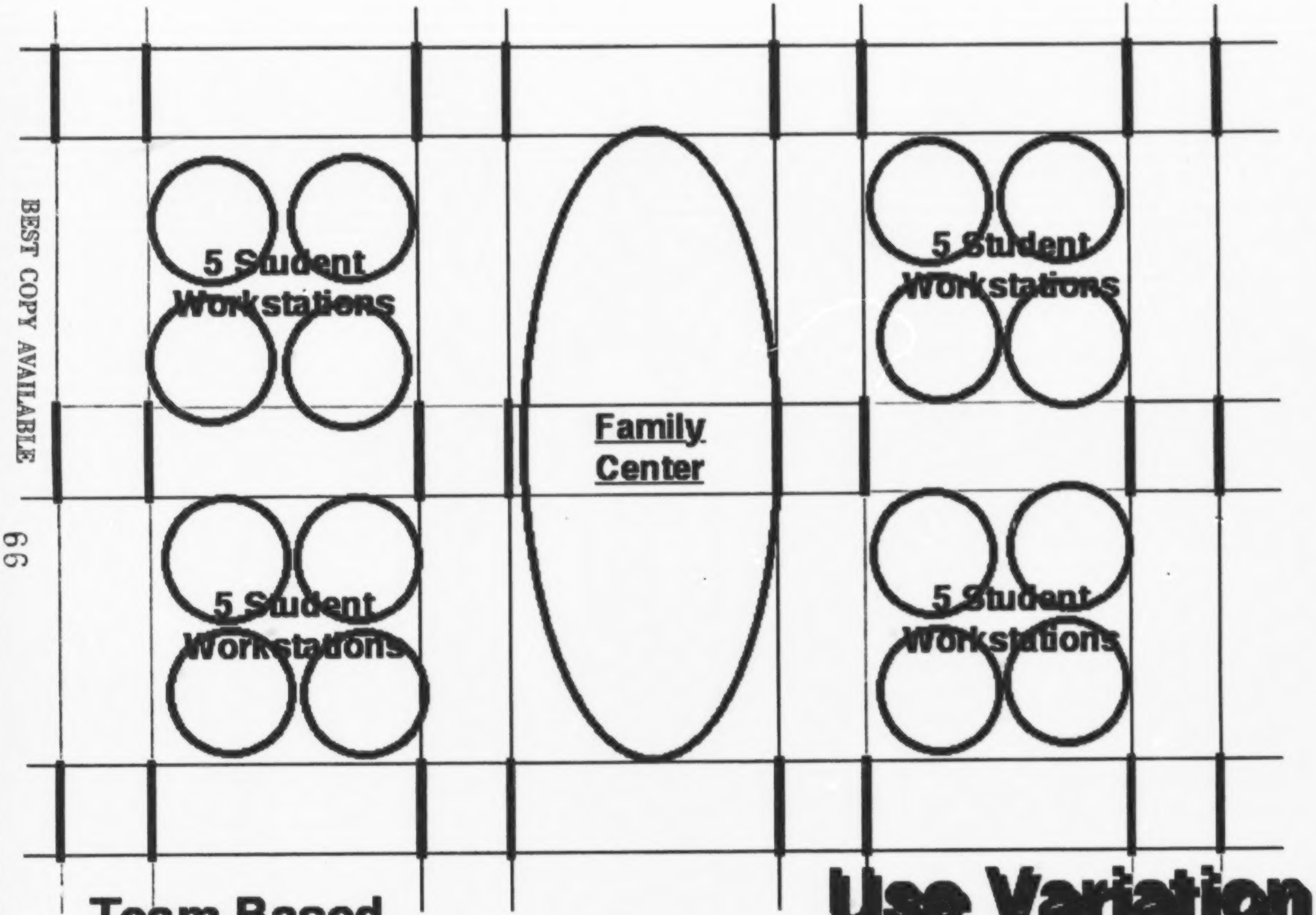
Home Base
20 Students

Home Base
20 Students

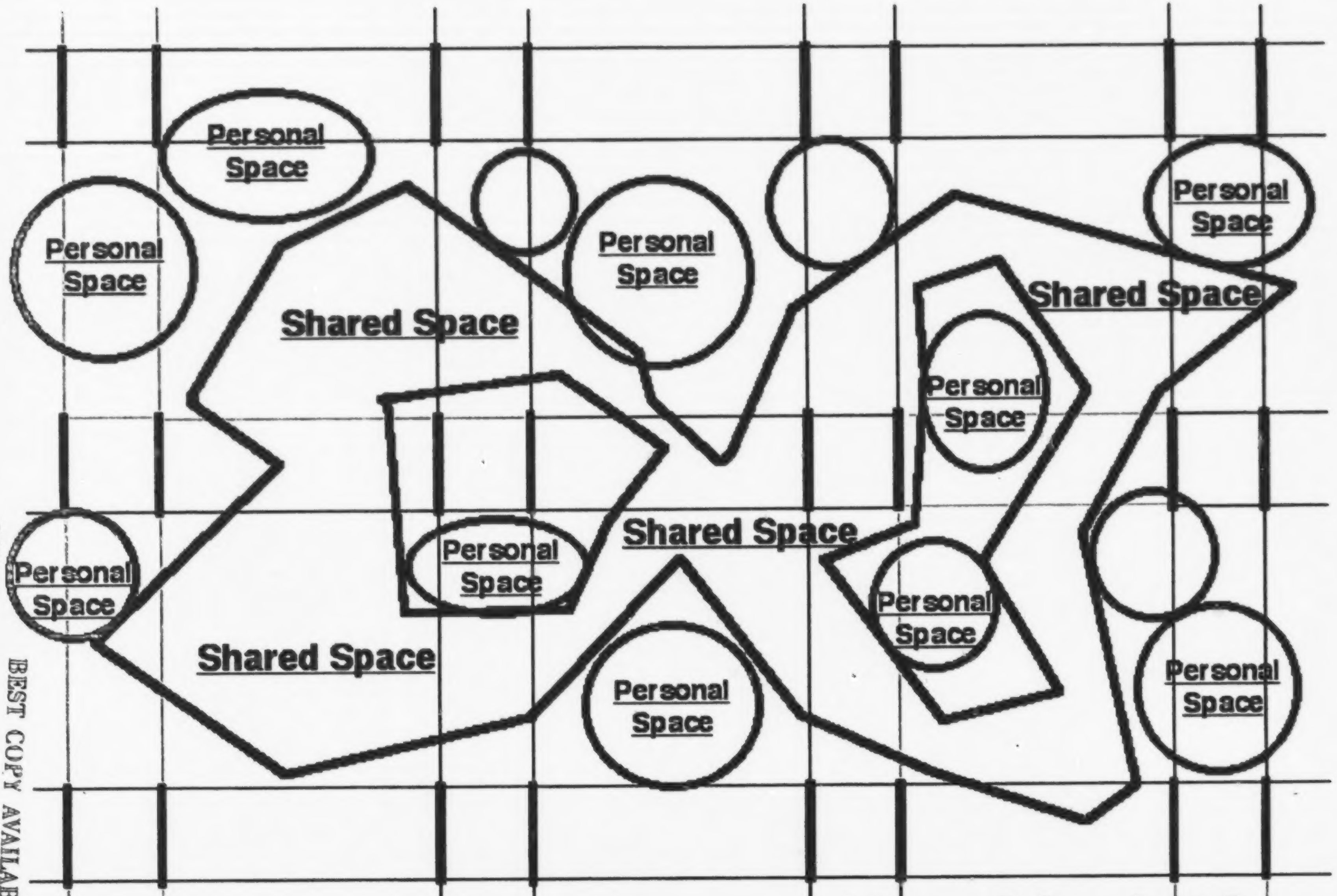
Home Base
20 Students

Traditional

Use Variation 2



Team Based



Learner Determined

Use Variation 3

Evidence

The three variations are embraced by the design concept in order for the school to start with what they are familiar with and then "grow" into the more innovative learning systems. Each of these learning environments are being practiced today and their support of a learners' personalization can be characterized as follows:

Variation 1: Personalization is limited (minimum freedom) to the student's locker. The only "spill over" is what occasionally falls on the floor.

Variation 2: Personalization is celebrated at each students workstation. The evidence shows that this spills over into the whole school, the home, and the partnerships of the school.

Variation 2: Personalization extends to the "Collaborative Personalization" of the physical learning environment. Although there are limited examples of this the evidence does show that this spills over into the learners life long experiences.

The Third Dimension

The plan concepts in the previous images evolved with an understanding of the total design. The beginning of this total design is explained in the next four images:

Sections through the short dimension of the school done by the Design Down Committee set the conceptual spacial concept (images 68 and 69).

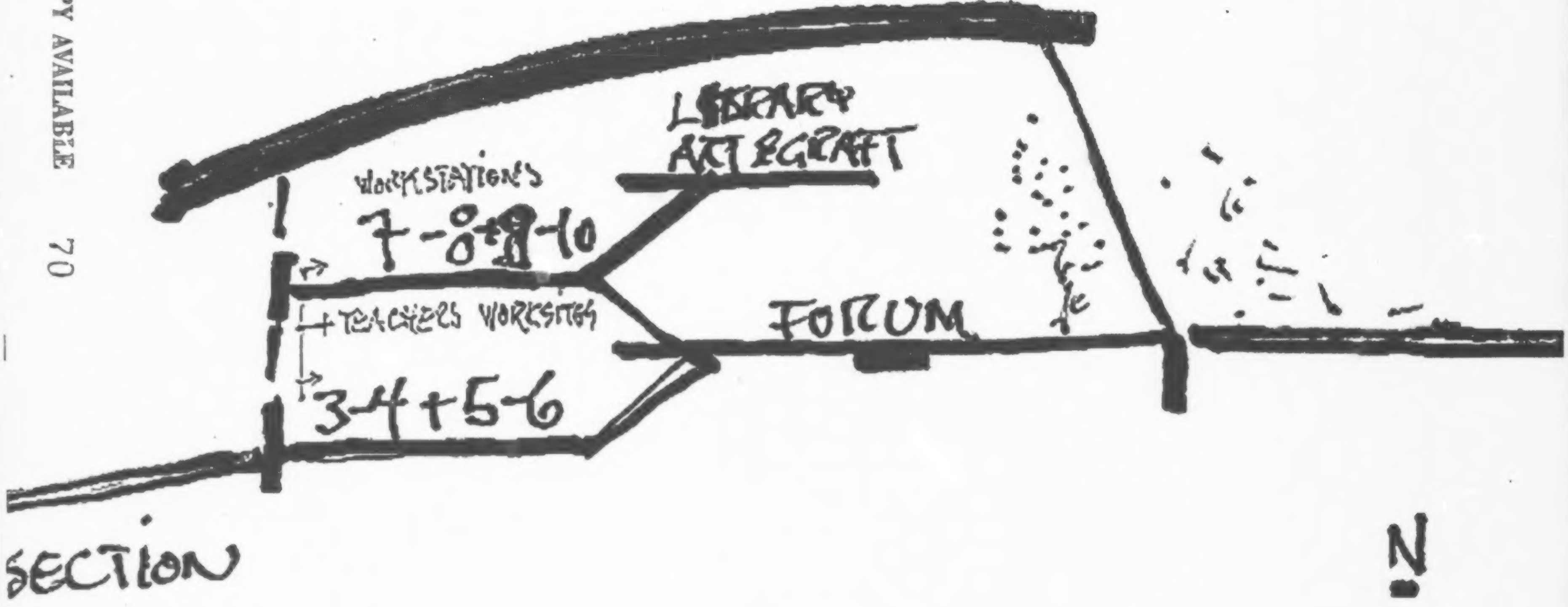
Light is the spiritual essence of the design.
The Forum is the major organizing space.
The interior will be visually connected to the exterior.
Vertical level changes will be limited to "split Levels."
The roof will be (partially) sod.

Section through the long dimension done by the author further develop the ideas of Light (image 70).

The "Image Concept" (image 71) begins to depict the total concept.

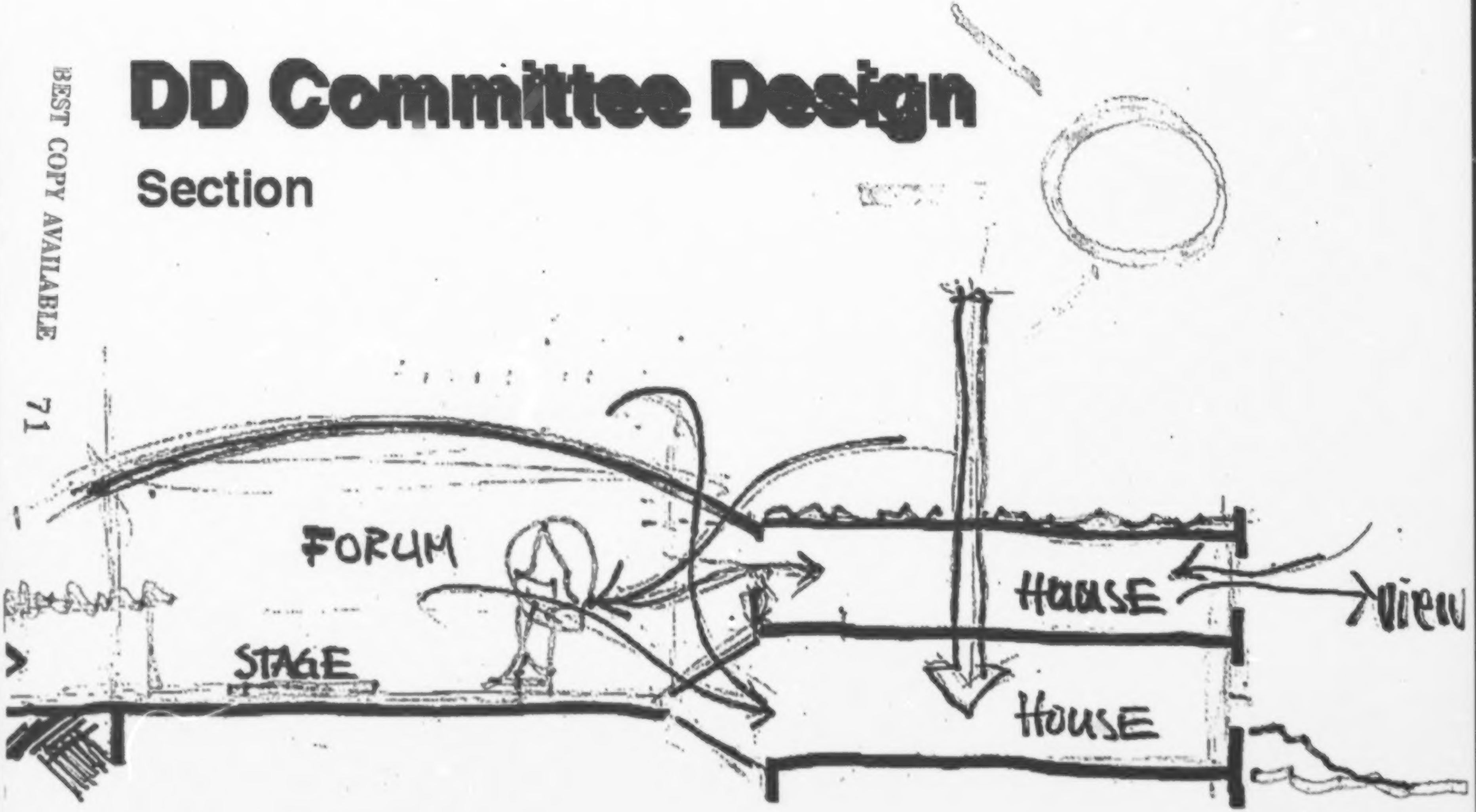
DD Committee Design

Section



DD Committee Design

Section



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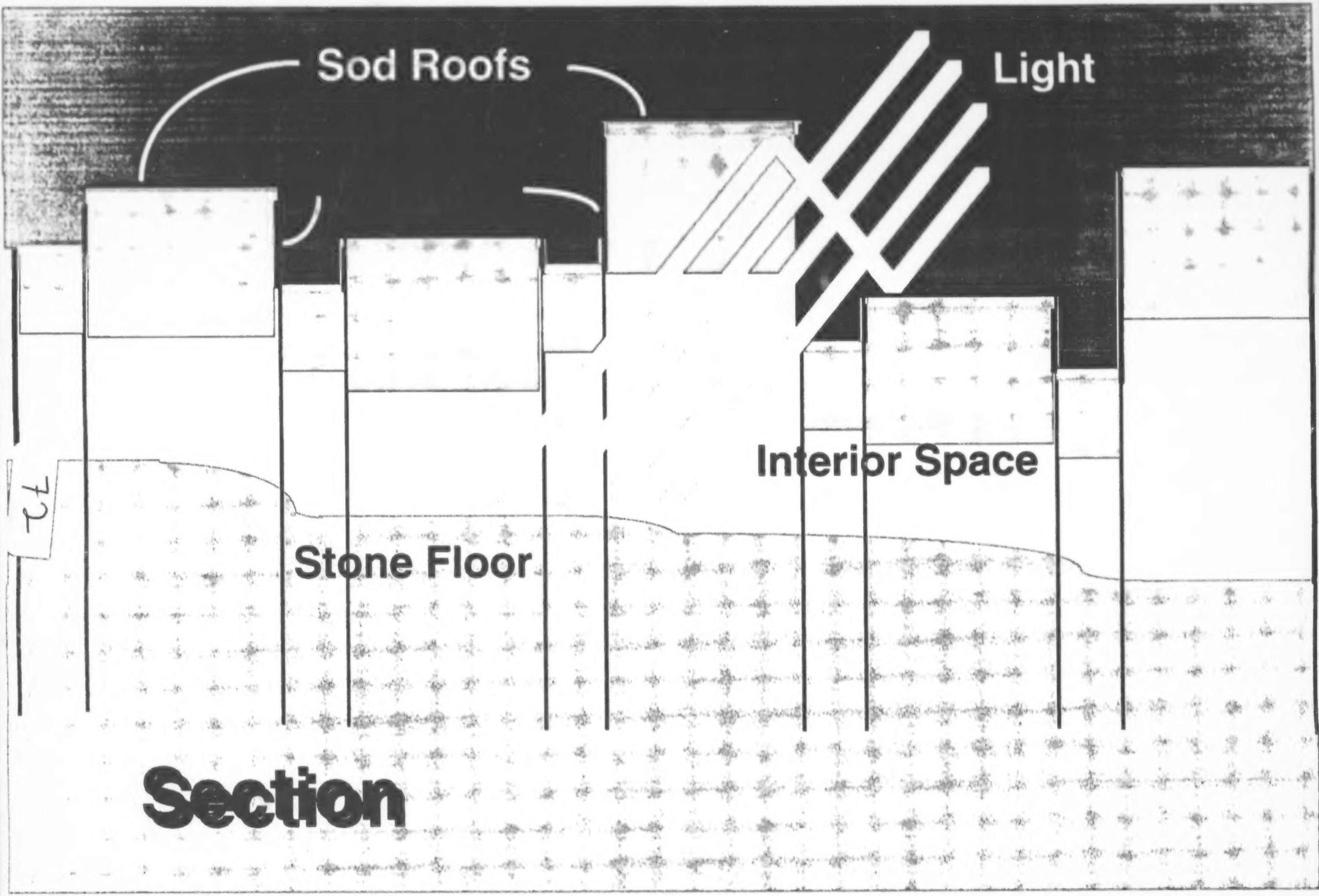
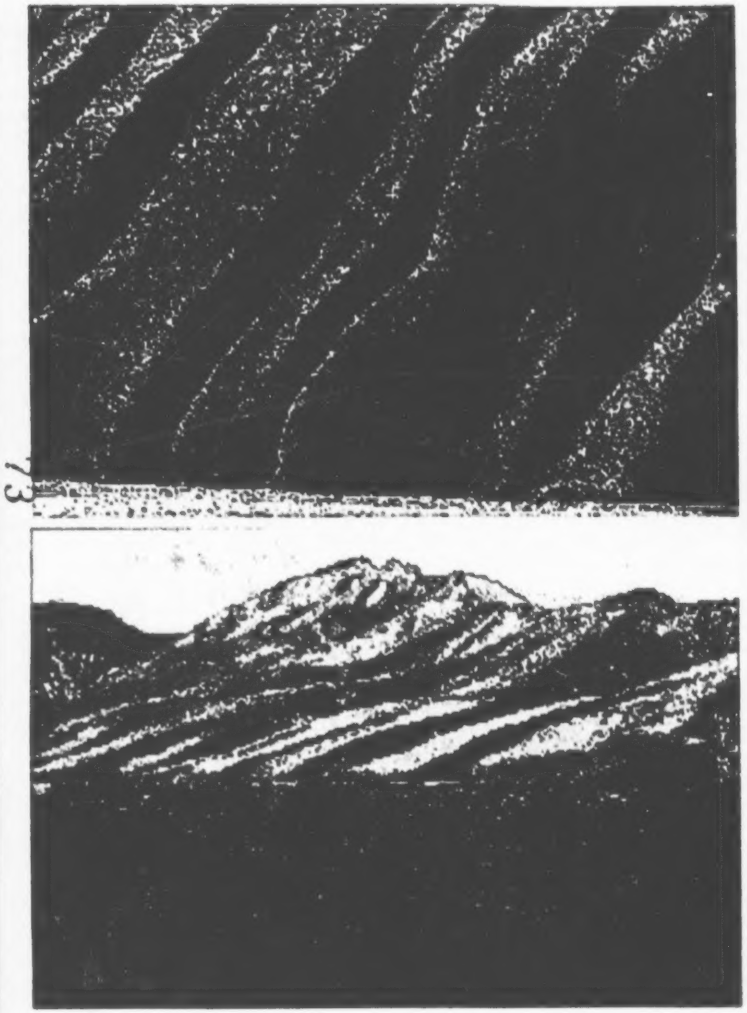
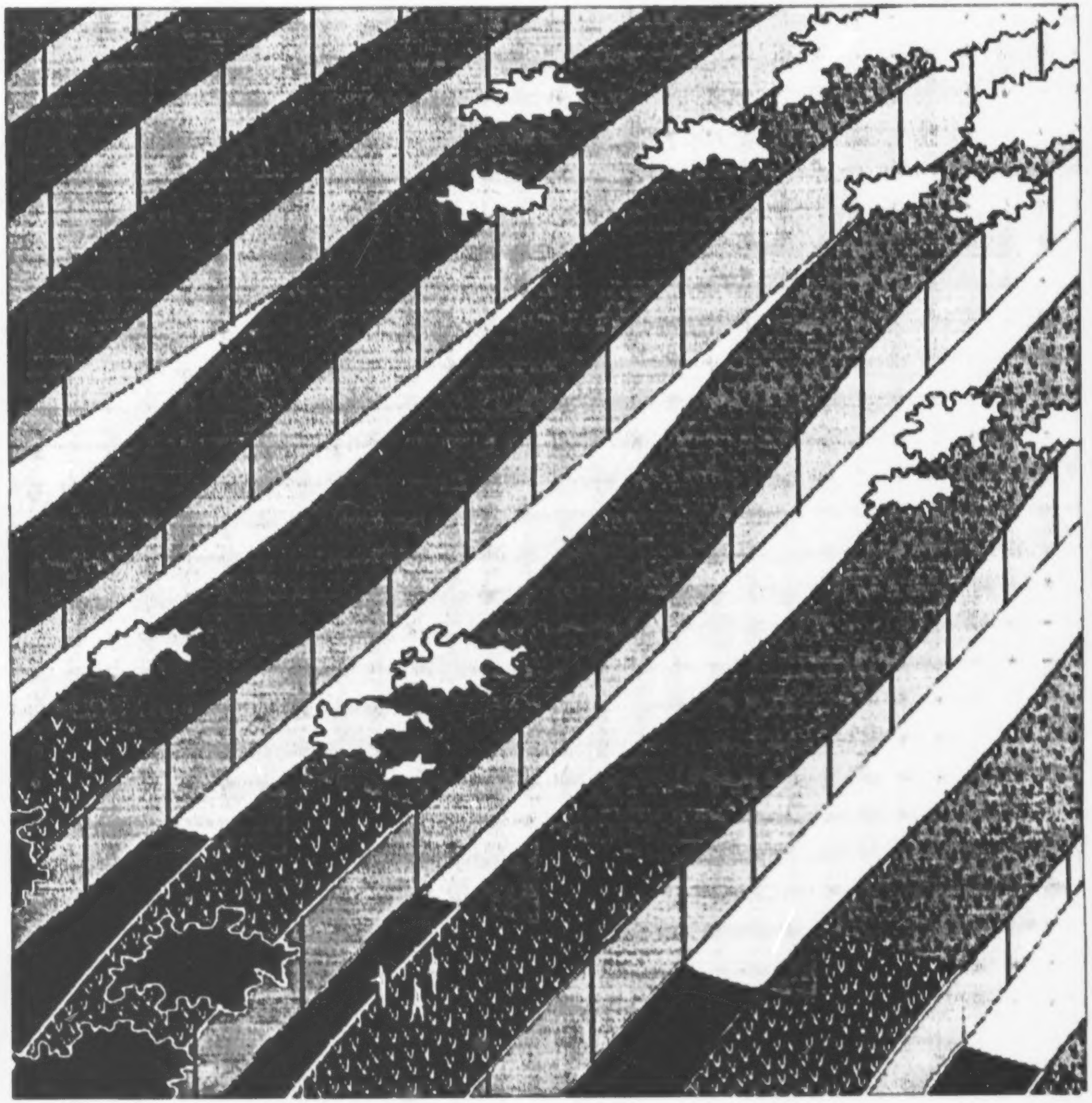
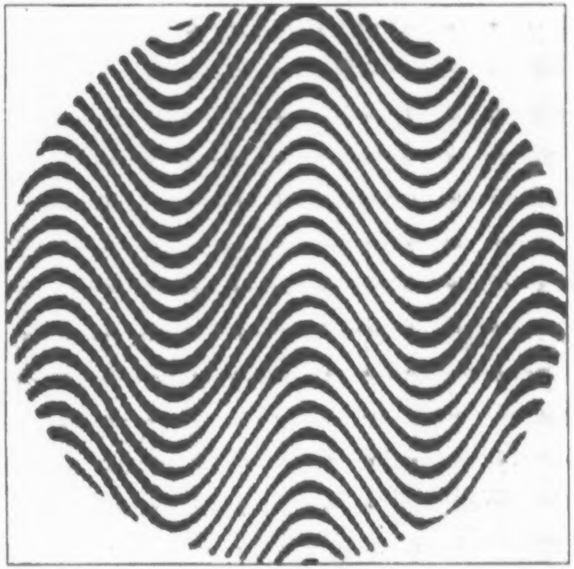

Sod Roofs
Light
Interior Space
Stone Floor
Section

Image Concept



Connected to the Landscape

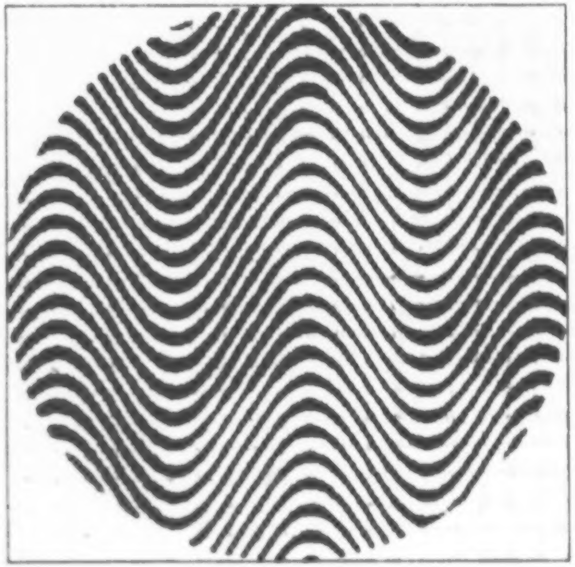




7.
Freedom and Creativity

People are creative in most all that they do. To speak or write is to create with words. Even to listen and make sense of what you hear is mental creativity. Learning is a process which enriches these creative abilities. And the learning environment can enable this enrichment.

However, why is it that nearly all children are creative when they enter school and only a few are creative when the leave? And does the learning environment make a difference?



7.

Freedom and Creativity

continued

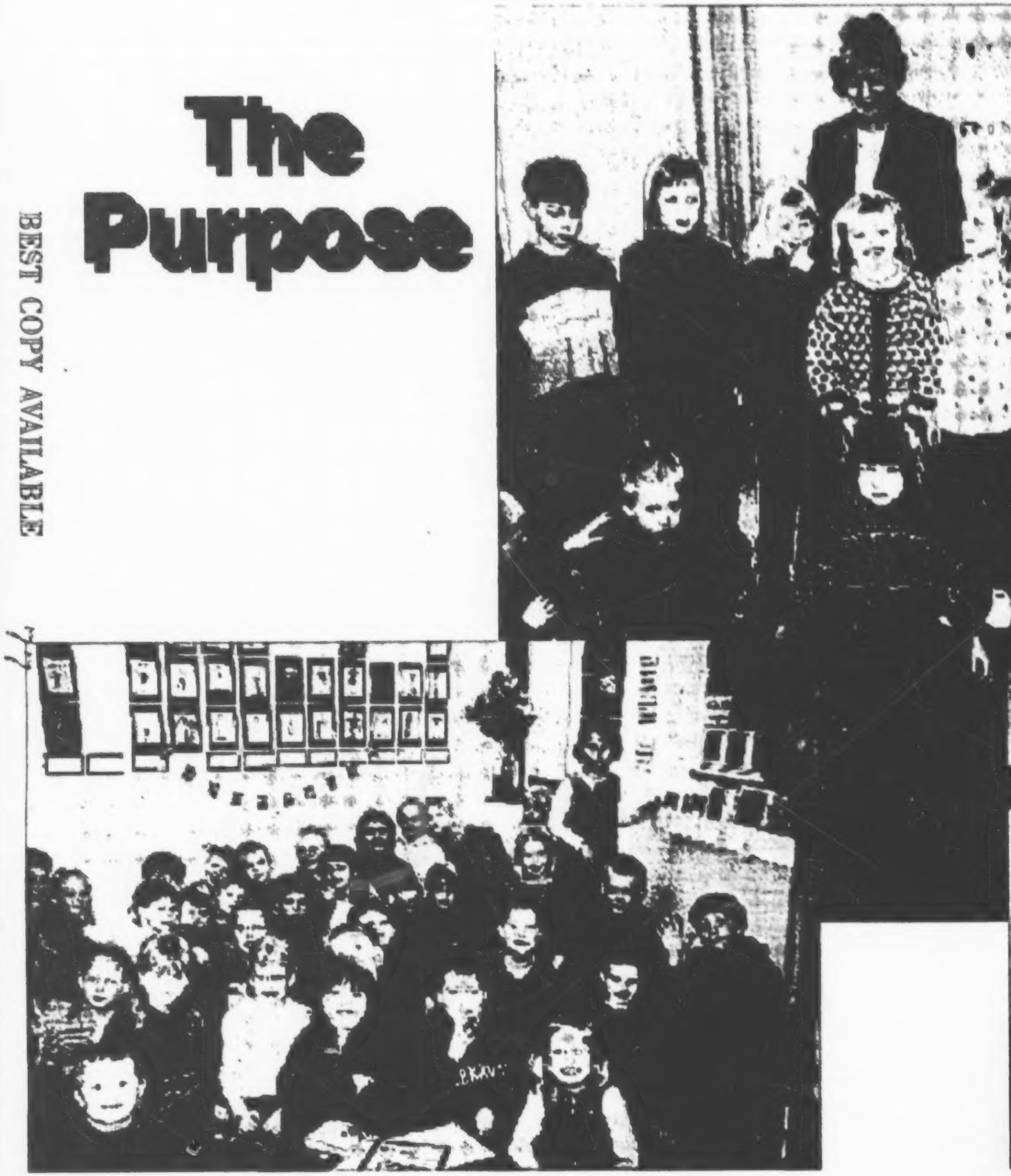
When educators with their architects predetermine nearly every aspect of a child's interaction with their environment they restrict or limit the range of possible learning experiences. This curtailment of freedom minimizes the development of creativity.

The "Cells and Bells" model is a manifestation of multiple decisions to predetermine all students' interactions. The approach to the design of the new school at Grafarholti, through it's intentional ambiguities, is to provide a learning environment which enriches creativity by enabling freedom.

Child "Self-made" Environments

The Nyr grunnskoli i Grafarholti will not only support creativity in the regular programs (Art, Music) but also by freeing the child to create their own environments. This is their nature.

The Purpose



Children are at the heart of the purpose of schools.

Schools need to be truly "child centered."

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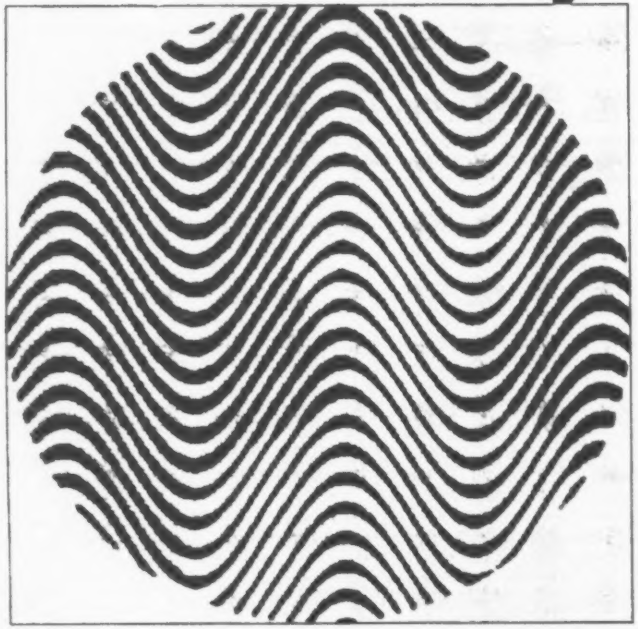
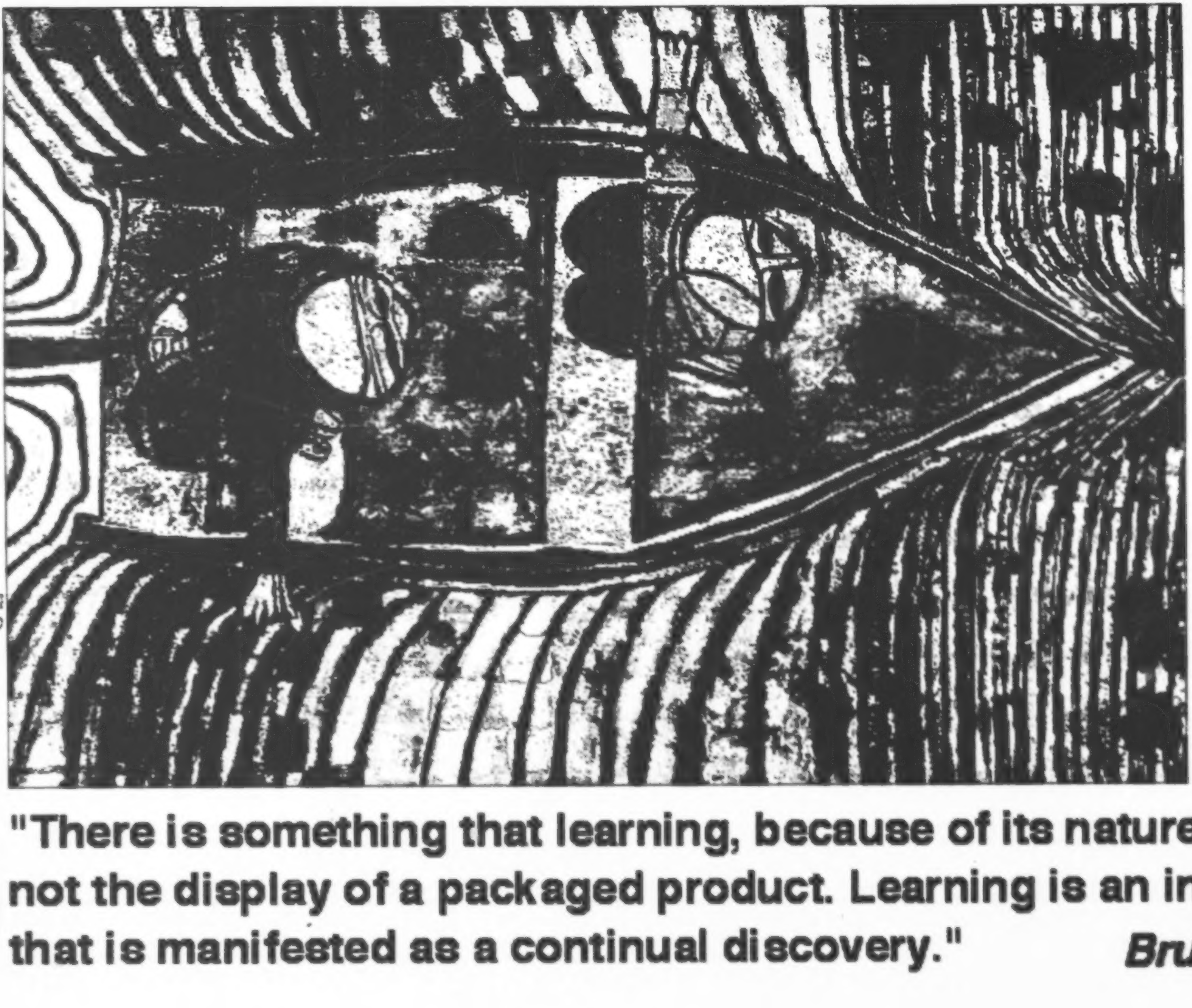
8. Summary



In the beginning we ask you to envision a place that enriches a child's creativity, enables a child's freedom, and is a place where children learn that is democratic. To achieve this, all the components of a school (vision, processes, organization, staff, etc.) must be supported by an environment which enhances rather then limits the learning experiences. The new school at Grafarholti is such a place.

The key element in this physical environment design is the ability of the children and teachers to create their own learning environments and not having everything predetermined for them. Schools are over designed.

Schools should be more like a jazz ensemble, an opportunity to experience collaborative improvisation.



"There is something that learning, because of its nature, is not: it is not the display of a packaged product. Learning is an inner process that is manifested as a continual discovery." *Bruce A. Jilk*

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